THE DUBLIN

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OF

MEDICAL SCIENCE.

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INCLUDING THE

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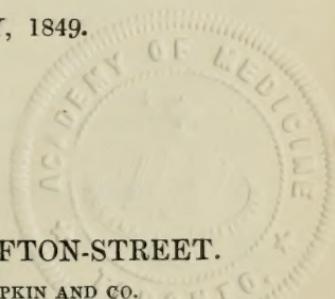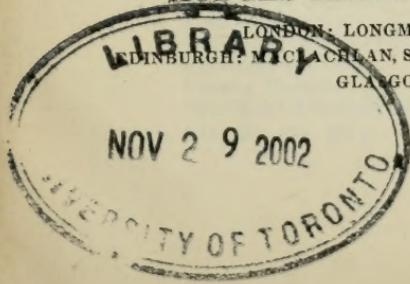
MEDICAL SCIENCE.

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Part II.—REVIEWS AND BIBLIOGRAPHICAL NOTICES.

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NOTICES TO CORRESPONDENTS.

THE present Number contains the first part of the promised Report on the late Epidemic Fever in Ireland. It will be continued in our next;—in the mean time we would feel obliged if our country friends, who have not yet replied to our Circular on the subject, would do so before the end of the present month. We have again to express our obligations to those who have so kindly assisted in furnishing the required information.

The length of our Original Communications, and the extent of the Chemical Retrospect, has obliged us to omit Reviews of Dr. Graves's Clinical Medicine, Omerod on Fever, West on Diseases of Children, and several others, some of which are already in type.

We have to thank the various Authors and Publishers who have so promptly forwarded us their works ;—no less than seventy-one Books and Pamphlets, exclusive of Periodicals, having been received since our last issue, as may be seen by the subjoined list of " Books Received."

German, Danish, or Swedish Publications, and exchanged Journals, will reach us safely, if forwarded through Perthes, Besser, and Co., to Dr. Oppenheim, Hamburgh. Our American exchanges have been, with few exceptions, very irregular of late. Our friends across the Atlantic should remember, when they forward us their Journals, unpaid, *by Post*, that our Periodical is forwarded regularly to Wiley and Putnam, New York, free of all expense. We have, therefore, omitted several Journals, both Continental and American, from our present List of Exchanges.

The present Number contains the Annual List of our Irish Subscribers for 1849; a reference to it will show the steady increase of this Periodical in Ireland. notwithstanding all the depressing circumstances of the present times. Since the publication of our last List we have lost by death, Dr. Coen, one of the oldest members of the Profession in Ireland, long since retired from practice with a handsome independence,—he was a Licentiate of the King and Queen's College of Physicians, and had been originally apothecary to Steevens's Hospital ; we have also lost Dr. William Griffin, of Limerick, whose Biography we published in the November Journal ; Dr. Hunt, a sketch of whose life and character will be found in the August Number ; and Dr. Wilmot, with whose Memoir we now present our readers,—besides Drs. Carey, of Fenagh ; Le Grange, of Finglass ; and Mahon, of Eyrecourt. We have also to record the death of Mr. Auchinleck, one of the Surgeons to Mercer's Hospital, and Lecturer on Surgery in the Dublin School of Medicine, Peterstreet, which he assisted to found.

In order to meet the recent Post-Office regulations, we have so arranged that in future each Number, being within one pound weight, can be sent for *Sixpence* to any part of the United Kingdom. In so doing, however, we have in no way compromised our former engagement ; each Volume shall contain at least *five hundred pages*, including a greater amount of Original Matter than any other similar Periodical in Great Britain or Ireland. Persons wishing to have this Journal forwarded by Post, will please to signify their intention to the Publishers.

We beg leave again to remind our medical friends in the country parts of Ireland, of our anxiety to be furnished with popular Medical Superstitions, and to return thanks for those which have already been forwarded to us.

With the desire of making the Dublin Quarterly Journal, as far as lies in our power, not only a vehicle for original investigation, and the most recent discoveries in Medicine, but also a repository for our National Medical Literature, we have determined on inserting, from time to time, in addition to the Biographical Memoirs, Lists, and occasionally Bibliographical Notices of all Medical Works, either written by Irishmen, or published in this country ; and we would gladly receive any information on this subject.

THE

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OF

MEDICAL SCIENCE.

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1. On Infantine Laryngismus ; with Observations on artificial Feeding as a frequent Cause of this Complaint, and of other convulsive Diseases of Infants. By James Reid, M. D. London : Churchill, 1849. 8vo. pp. 204.

2. The Journal of Psychological Medicine and Mental Pathology. No. V. January, 1849.

3. The Training Institutions for Nurses and the Workhouses. By Edward Sieviking, M. D. London : Williams and Norgate, 1849. Pamphlet, pp. 22.

4. Observations upon the Inutility of exterminating the resident Landlords of Ireland, by Act of Parliament or otherwise ; and some Suggestions for their Self-preservation. Dublin : Hodges and Smith, 1849. Pamphlet, pp. 32.

5. On the economic Causes of the present State of Agriculture in Ireland. Part III. By W. N. Hancock, LL. B. Dublin : Hodges and Smith, 1849. Pamphlet, pp. 12.

6. Medical Student's Guide, containing the latest Regulations of all the Licensing Medical Corporations of Great Britain and Ireland, &c. Dublin : Fannin and Co., 1849.

7. Register-General's Return of the Mortality in 117 Districts of England, for the Quarter ending 31st December, 1848.

8. Portraits of Diseases of the Skin. By Erasmus Wilson, F. R. S. London : Churchill, 1848. Large Fol. Coloured Plates. Fasciculi I. and II.

9. Surgical Anatomy. By Joseph Maclise. London : Churchill, 1849. Large Fol. Coloured Plates. Fasciculus II.

10. The Ethnological Journal, a Magazine of Ethnography, Phrenology, and Archæology. Nos. for February, March, and April, 1849.

11. The Elements of Botany. By M. Adrien De Jussieu. Translated by James Hewetson Wilson, F. L. S., &c. London: Van Voorst, 1849. 8vo. pp. 755.

12. Sequel to Outlines of Medical Proof. By Thomas Mayo, M. D., F. R. S., &c. London: Longman, 1849. Pamphlet, pp. 41.

13. A Treatise on the Management of Fresh Water Fish, with a View to making them a Source of Profit to Landed Proprietors. By Gottlieb Boccius. London: Van Voorst, 1841. 8vo. pp. 38.

14. Fish in Rivers and Streams. A Treatise on the Production and Management of Fish in Fresh Water, by Artificial Spawning, Breeding, and Rearing; showing also the Cause of the Depletion of all Rivers and Streams. By Gottlieb Boccius. London: Van Voorst, 1848. pp. 38.

15. The Cyclopædia of Anatomy and Physiology. Edited by Robert B. Todd, M. D., F. R. S. Parts XXXIV. and XXXV. London: Longman, 1849.

16. Cholera Gleanings; a Family Hand-book, enabling Readers of all Classes to judge for themselves of the great Error into which Governments were unfortunately led by Men looked upon as infallible Guides, who very strenuously maintained the Cholera to be a Disease during which " if the Living shall fly from the Sick they shall perish." By Dr. J. Gilkrest, Inspector General of Army Hospitals, and Corresponding Member of the Paris National Academy of Medicine. Gibraltar, 1848. Pamphlet, pp. 86.

17. Thoughts on Pulmonary Consumption; with an Appendix on the Climate of Torquay. By William Herries Madden, M. D., &c., &c. London: Churchill, 1849. pp. 219.

18. On healthy and diseased Structure, and the true Principles of Treatment for the Cure of Diseases, especially Consumption and Scrofula, founded on Microscopical Analysis. With Plates. By William Addison, M. D. London: Churchill, 1849. 8vo. pp. 320.

19. Elements of Electro-Biology, or the Voltaic Mechanism of Man; of Electro-Pathology, especially of the Nervous System; and of Electro-Therapeutics. By Alfred Smee, F. R. S., Surgeon to the Bank of England, &c., &c. Illustrated with numerous Engravings on Wood. London: Longman, 1849. 8vo. pp. 164.

20. On the Dependance of Animal Motion on the Law of Gravity. By Henry Wiglesworth, M. B., Scholar in Physiology of the University of London. Parts I. and II. London: Bailliere, 1849. 12mo. pp. 156 and 210.

21. Eruptions of the Face, Head, and Hands, with the latest Improvements in the Treatment of Diseases of the Skin. Illustrated with coloured Plates. By T. H. Burgess, M. D., Editor and Translator of Cazenave's Manual of Diseases of the Skin. London: Renshaw, 1849. 8vo. pp. 254.

22. The Natural History of Ireland. Vol. I.—Birds. Comprising the Orders Raptores and Insessores. By William Thompson, Esq., President of the Natural History Society, Belfast. London: Reeve, Benham, and Reeve, 1849. 8vo. pp. 434.

23. On the Nature of Limbs. With Illustrations. A Discourse on Friday, February 9th, at an Evening Meeting of the Royal Institution of Great Britain. By Richard Owen, F. R. S. London: Van Voorst, 1849. 8vo. pp. 119.

24. The Chemistry of Vegetable and Animal Physiology. By Dr. G. J. Mulder. Translated by Dr. Fromberg, with an Introduction and Notes by James W. Johnston, F. R. S. (With Engravings.) Part IV. Edinburgh: Blackwood and Sons.

25. Ninth Annual Report of the Crighton Royal Institution for Lunatics. Dumfries, November, 1848. Pamphlet, pp. 45.

26. Report on State of Crighton Institution during Prevalence of Cholera in Dumfries. Pamphlet, pp. 8.

27. Two Lectures on Cholera and Intermittent Fever. Addressed to the Members of the Medical Profession in Manchester. By Charles W. Bell, M. D., Physician to the Manchester Infirmary, &c. London: Churchill, 1849. 12mo. pp. 101.

28. Cod-Liver Oil; its Uses, Mode of Administration, &c. &c. Compiled from the best and latest Authorities, British and Foreign. By John Rayner. London: Churchill. Pamphlet, pp. 16.

29. The Brain the sole Centre of the Human Nervous System. By Edwin Lee, Member of several of the principal European Medical and Chirurgical Societies. (Read before the Royal Society, May, 1848.) Edinburgh: Stark and Company, 1848. Pamphlet, pp. 14.

30. The Homologies of the Human Skeleton. By Holmes Coote, F.R.C.S.E. London: Highley, 1849. 8vo. pp. 100.

31. Practical Remarks upon the Use of the Speculum in the Treatment of the Diseases of Females. By Thomas R. Mitchell, M. D., &c., illustrated with Cases and coloured Plates. Dublin: Fannin and Co., 1849. 12mo. pp. 83.

32. On the Management of the Skin, as a Means of promoting and Preserving Health. By Erasmus Wilson, F. R. S. Third Edition. London: Churchill, 1849. 12mo. pp. 238.

33. The Hunterian Oration, delivered before the Royal College of Surgeons of England, on February 14, 1849. By Cæsar H. Hawkins, Surgeon to St. George's Hospital. London: Churchill, 1849. Pamphlet, pp. 35.

34. The Ninth Biennial Report, being for the Years 1847–48, and containing the Forty-third and Forty-fourth Annual Medical Reports, &c., &c., of the Royal London Ophthalmic Hospital. 1849. pp. 32.

35. Researches on Meteorology. By Bennet Dowler, M. D. (Reprinted from the New Orleans Medical and Surgical Journal for January, 1848.) Pamphlet, pp. 24.

Also by the same Author:

Researches critical and experimental, on the Capillary Circulation. pp. 34.

Experimental Researches on the Post Mortem Contractility of the Muscles, with Observations on the Reflex Theory. pp. 39.

Contributions to the Natural History of the Alligator (Crocodilus Mississippiensis), with a Microscopic Addendum. pp. 30.

Criticisms and Controversies relating to the Nervous and Muscular Systems. pp. 69.

A Question of Originality settled. New Orleans: Cohn, 1848. pp. 8.

36. De l'Uretrotomie ou de Quelques Procedes, peu Usites de Traiter les Retreelssements de l'Uretre. Par le Dr. Civiale. Avec une planche. A Paris: Bailliere, 1849. pp. 119.

37. Du Suc Pancreatique et de son Bole, Dans les Phenomenes de la Digestion. Par le Dr. Cl. Bernard. Paris, 1849. pp. 24.

38. Rapport sur un Memoire de M. Cl. Bernard.

39. Notice des Travaux scientifiques de M. le Dr. Ch. Rohin. pp. 18.

40. Memoire sur l'Existence d'un Œuf ou ovule. Chez les Males comme Chez les Femelles des Vegetaux et des Aminaux, produisant, l'un les Grains de Pollen ou les Spermatozoides l'autre les Cellules primitves de l'embryon. Par M. Ch. Robin. pp. 22.

41. A short Sketch of the Life and Writings of the late Joseph Clarke, M. D., &c., &c., containing minute Results of his private Practice, extending over a Series of forty-four Years, including 3878 Births. By Robert Collins, M. D., &c. London: Longmans, 1849. 8vo. pp. 88.

42. Report on the Epidemic Cholera, as it has appeared in the Territories subject to the Presidency of Fort St. George. Drawn up by order of the Government, under the Superintendence of the Medical Board. By William Scot, Surgeon and Secretary to the Board. (Abridged from the original Report, printed at Madras in 1824.) With Introductory Remarks by the Author. London: Murray, 1849. 8vo. pp. 212.

43. Medicines; their Uses and Mode of Administration, including a complete Conspectus of three British Pharmacopœias, an Account of all the new Remedies, and an Appendix of Formulæ. By J. Moore Neligan, M. D, &c. With Notes and Additions, conforming to the Pharmacopœia of the United States, and including all that is new or important, and recent Improvements. By D. M. Reese, M. D., &c. Third Edition. New York: Harpur and Brothers, 1846.

44. The Medical Remembrancer, or Book of Emergencies, concisely pointing out the immediate Remedies to be adopted in the first Moments of Danger from Poisoning, Drowning, Apoplexy, Burns, and other Accidents; with the Tests for the principal Poisons, and other useful Information. By Edward B. L. Shaw, M. R. C. S. Third Edition. London: Churchill, 1849. 12mo. pp. 108.

45. Report of the Secretaries and Treasurer of the Birmingham and Midland Counties Pathological Society, 1849; to which is added a List of the Members, and the Meetings of the Society during the Year 1849. Birmingham. Pamphlet, pp. 35.

46. Anæmia and its Consequences; Enlargement of the Thyroid Gland and Eye-balls. By James Begbie, M. D., F. R. S. E., Fellow of the Royal College of Physicians, and Vice-President of the Medico-Chirurgical Society of Edinburgh. (Read to the Medico-Chirurgical Society of Edinburgh, 3rd January, 1849.) Edinburgh: Sutherland and Knox, 1849. Pamphlet, pp. 15.

47. Lectures on the Causes and Treatment of Ulcers of the Lower Extremity. Delivered at the London Hospital during the Summer of 1848. By George Critchett, Esq., F. R. C. S., Surgeon to the Royal London Ophthalmic Hospital, &c. &c. London: Churchill, 1849. 8vo. pp. 121.

48. Lectures on the Parts concerned in the Operations on the Eye, and on the Structure of the Retina; delivered at the Royal London Hospital, Moorfields, June, 1847; to which are added, a Paper on the Vitreous Humour, and also a few Cases of Ophthalmic Disease. By William Bowman, F. R. S., &c. &c. London: Longmans, 1849. 8vo. pp. 143.

49. Parturition, and the Principles and Practice of Obstetrics. By W. Tyler Smith, M. D., &c. London: Churchill, 1849. 8vo. pp. 395.

50. A Letter to Lord Morpeth and the Members of the Board of Health, on the Question—Is Cholera contagious or not? By William Reid, M. D. London: Highly. Pamphlet, pp. 16.

51. Practical Remarks on the Treatment of Malignant Cholera. By Charles Y Haines, M. D. Cork: 1838. Pamphlet, pp. 40.

52. The Calendar of the Queen's College, Birmingham, 1849. Edited by The Dean of the Faculty. Birmingham: Johnson. pp. 160.

53. Questions and Observations in Hygiene, recommended to the Consideration of Naval Medical Men; suggested to the Mind of the Author by the approach of Asiatic Cholera. By F. J. Brown, M. D. London: Churchill, 1849. Pamphlet, pp. 64.

54. Practical Observations on the Prevention, Causes, and Treatment of Curvature of the Spine ; with Engravings and Woodcuts, illustrative of the Cases. By I. Hare, Surgeon. Third Edition. London : Churchill, 1849. 8vo. pp. 245

55. A Description of the Structure and Functions of the Human Skin, &c. &c. By Alfred Markwick. London : Printed by the Epithem Company, 1847. Small 8vo. pp. 137.

56. Report of the Medical Officers of the Dublin Metropolitan Police, for the Year 1848, with Returns in connexion therewith. Dublin : Thom, 1849. Folio, pp. 15.

57. The British Journal of Homœopathy, for January, 1849.

BOOKS AND PERIODICALS WITH WHICH THE DUBLIN QUARTERLY JOURNAL IS EXCHANGED.

1. The British and Foreign Medico-Chirurgical Review and Journal of Practical Medicine. London : Highley. (Recd. No. for April, 1849)

2 The Edinburgh Medical and Surgical Journal ; exhibiting a concise View of the latest and most important Discoveries in Medicine, Surgery, and Pharmacy. Edinburgh : Black. (Recd. No. for April, 1849.)

3. Transactions of the Medical Society of London. London.

4. The Transactions of the Provincial Medical and Surgical Association. London : Churchill.

5. The Retrospect of Medicine, being a half-yearly Journal, containing a retrospective View of every Discovery and practical Improvement in the Medical Sciences. Edited by W. Braithwaite. London : Simpkin and Co.

6. The Half-Yearly Abstract of the Medical Sciences, being a practical and analytical Digest of the principal British and Continental Medical Works, &c. Edited by N. H. Ranking, M. D. London : Churchill.

7. Guy's Hospital Reports. London : Highley.

8. The Pharmaceutical Journal and Transactions. London. Edited by Jacob Bell. (Recd. regularly.)

9. The London, Edinburgh, and Dublin Philosophical Magazine and Journal of Science. Conducted by Sir David Brewster, Richard Taylor, Richard Phillips, and Sir Robert Kane. London : Taylor. (Recd. regularly.)

10. Monthly Journal of Medical Science, in which is incorporated The Northern Journal of Medical Science. Edinburgh : Sutherland and Knox. (Recd. regularly.)

11. The Athenæum—Journal of English and Foreign Literature, Science, &c. London. (Recd. regularly.)

12. London Medical Gazette, or Journal of Practical Medicine. London. (Recd. regularly.)

13. The Medical Times. London. (Recd. regularly.)

14. Provincial Medical and Surgical Journal. London. Edited by Robert Streeten, M. D. Worcester : Dighton and Co. (Recd. regularly.)

15. London Journal of Medicine, a Monthly Record of the Medical Sciences. London : Taylor, Waller, and Maberly. (Recd. No. for April, 1849.)

16. The American Journal of the Medical Sciences. Edited by Isaac Hays, M. D., Philadelphia. (Recd. No. for January, 1849.)

17 The Medical Examiner and Record of Medical Science. Edited by R. W. Houston, M. D. Philadelphia : Lindesay and Blackston. (Recd. Nos.

up to January, 1849.) We have received the First Number of the New Series of this esteemed Periodical, now edited by Drs. F. G. Smith, and D. H. Tucker.

18. The New York Journal of Medicine and the Collateral Sciences. Edited by C. A. Lee, M. D. New York : Langley. (Recd. Nos. for 1848.)

19. The American Journal of Arts and Sciences ; conducted by Professor Silliman, and E. Silliman, Jun., and J. D. Dana. New Haven. (Recd. all the Nos. for 1848.)

20. The American Journal of Pharmacy. Published by authority of the Philadelphia College of Pharmacy. Edited by J. Carson, M. D., and R. Bridges, M. D. Philadelphia: Merrishow and Thompson.

21. The American Journal of Insanity. Edited by the Officers of the New York State Lunatic Asylum, Utica. (Recd. all Nos. for 1848, and for January, 1849.)

22. The British American Journal of Medical and Physical Science. Montreal. (Recd. regularly.)

23. The American Journal and Library of Dental Science. Published under the auspices of the American Society of Dental Surgeons. (Recd. regularly.)

24. Gazette Médicale de Paris. Paris. (Recd. regularly.)

25. Gazette Médico-Chirurgicale a Paris. Paris. (Recd. regularly.)

26. La Lancette Française, Gazette des Hôpitaux Civils et Militaires. Paris. (Recd. regularly).

27. Annales d'Oculistique, publieés par la Dr. Florent Cunier, Bruxelles. (Not yet recd.)

28. Journal de Chimie Medicale, de Pharmacie, de Toxicologie, et Revue de Nouvelles, scientifique, Nationales et Etrangers, &c. Paris.

29. Journal de Pharmacie et de Chimie, &c. Paris. (Recd. regularly.)

30. L'Union Medicale, Journal des entreles scientifiques de pratiques, Moraux et professionelles du Corps medicale. Paris. (Recd. regularly.)

31. Revue Médicale Française et Etranger, Journal des Progress de la Medicine Hippocratique. Par J. B. Cayol. Paris.

32. Revue Medico-Chirurgicale de Paris. (Recd. regularly.)

33. Annales d'Hygiéne Publique et de Medecine Legale. Paris: Bailliere.

34. Archives Général de Médécine ; Journal Complementaire des Sciences Medicales. Paris. (Not yet recd.)

35. Bulletin de l'Academie Royale de Medecine. Paris: Bailliere. (Recd. regularly.)

36. Annales et Bulletin de la Societe de Medicine de Gand. (Recd. regularly.)

37. Annales de la Société de Médecine Pratique de la Province d'Anvers (établie a Willebroeck). Boom. (Recd. regularly.)

38. Bulletin des Travaux de la Société Médico-Pratique de Paris.

39. Zeitschrift für die Gesammte Medicin mit besonderer Rücksicht auf Hospitalpraxis und ausländische Literatur. Von Dr. F. W. Oppenheim. Hamburg. (Recd. Nos. for September, October, and November, 1848.)

40. Neue Notizen aus dem Gebiete der Natur und Heilkunde, gesammlt der mitgetheilt von D. L. F. Froriep und Dr. R. Froriep. Weimar.

41. Zeitschrift de K. K. Gesellschaft der Aerzte zu Wien—Redakteur Dr. Karl Haller. Wien. (Not yet recd.)

42. Zeitschrift für Rationnelle Medezin; Herausgegeben Von Dr. J. Henle und Dr. C. Pfeufer, Professoren der Medecin an der Universitat Zu Heidelberg. (Not yet recd.)

43. Medecinische Jahrbücher des Kaiserliche Königliche Oesterreichen. Staats. Wien. (Recd. Nos. to November, 1848.)

44. Oesterreichesche medecinische Wochenschrift als Ergänzungsblatt der Medicinischen Jährbuch, &c. (Recd. Nos. to October, 1848.)

45. Journal für Chirurgie und Augenheilkunde herausgegeben von Dr. P. von Walther und Dr. T. A. von Ammon. Berlin. (Not yet recd.)

46. Virteljahrschrift für die praktische Heilkunde. Prag. Borrosch und Andiê. (Not yet recd.)

47. Bibliothek for Læger, Tredie Række. Udgivet af Direktionen for de classenske Literaturselskab. Redigeret af H. Selmer. Kjobenhavn. (Not yet recd.)

48. Norsk Magazin, for Lægevidenskaben, udgivet af Lægeforeningen Christiana. Redigeret af Faye, W. Boeck, Lund, Voss, A. W. Münster, Christiana, Feilberg, und Landmark.

49. Hygiea, Medecinsk och Pharmaceutisfi Mánadt-Skrift, Tionde Bandet. Stockholm: Fritze. (Recd. Nos. to September, 1848.)

50. Gazetta Medica Lombarda. Diretta dal Prof. Panizza, formerly the Gazetta Medica di Milano. Milan. (Recd. regularly.)

NOTICES TO CORRESPONDENTS.

THE great press of Original Communications, and the extent of the Fever Report, have obliged us to omit Reviews of several Works which we have received in this Number of the Journal. For the same reason we have been compelled to hold over from the Scientific Intelligence till the August Number several interesting Reports, some of which are already in type.

We hope to complete the Fever Report in our next Number, and beg to inform our Friends in Leinster, who have not yet replied to our Circular, that we will be glad to receive any Communications upon the subject which may reach us before the 20th of May. Since the publication of the February Number, we have received from Cork, Reports from Drs. Callanan, Cronin, and Popham, which shall appear in the Appendix to the Report, as well as that of Dr. Seton Reid, of Belfast, which was received too late for insertion in the present Number.

PART I.
ORIGINAL COMMUNICATIONS.

ART. I.—*On the Progress of Asiatic Cholera.* BY ROBERT J. GRAVES, M. D.

(*Continued from* p. 316, vol. vi.)

SINCE the publication of my last article on this subject, cholera has reached England; and its arrival has been attended by circumstances, which make me quite sure that the opinion, so positively announced both here and in London, by the Board of Health and the College of Physicians, rests on a very doubtful foundation. Before I proceed, however, to arraign this opinion, it may be well to recapitulate it. The Board of Health in Dublin have published a circular, in which we find this passage: "The Commissioners of Health are anxious to impress upon all persons the important difference that exists between cholera and fever, with respect to the mode of propagation of these epidemic diseases. Fever, it is well

known, is highly contagious, or easily propagated from one individual to another; while all experience shows that cholera is rarely, if ever, contagious; consequently, the separation of the sick from the healthy,—a measure so essential in checking the spread of fever,—is not required in cholera; and the friends and relatives of persons attacked with cholera may be under no apprehension of catching the disease, and need not be deterred from affording to the sick, in their own dwellings, every needful assistance and attention. The Commissioners of Health, after mature consideration, do not advise that cholera should be met by an extended system of hospital accommodation, such as is needful in epidemics of fever; but recommend, in preference, a general system of prompt and efficient dispensary relief. The non-contagious character of cholera fortunately removes all objection to the receiving of persons suffering under the disease into the ordinary hospitals of the country, whether infirmaries or fever hospitals,—all of which the Commissioners of Health advise should be open and in readiness to receive destitute persons in cholera."

In the circular issued by the Royal College of Physicians in London, the following paragraph occurs: " Cholera appears to have been very rarely communicated by personal intercourse; and all attempts to stay its progress by cordons or quarantine have failed. From these circumstances the Committee, without expressing any positive opinion with respect to its contagious or non-contagious nature, agree in drawing this practical conclusion : that in a district where cholera prevails, no appreciable increase of danger is incurred by ministering to persons affected with it, and no safety afforded to the community by the isolation of the sick."

I may here remark, that the Committee of the Royal College of Physicians in London have left themselves open to the charge of inconsistency; for, while they do not express any positive opinion with respect to the contagious or non-conta-

gious nature of cholera, they recommend measures which can only be justified by *a very positive opinion indeed, that the disease is not contagious.* It was unwise to preface the practical adoption of an opinion by an expressed doubt of its soundness.

Thus I find arrayed against my views two bodies, to whose authority the public must attach great importance. But, being persuaded that I am upholding the cause of truth against error, I am by no means discouraged, and feel myself urged by a sense of duty to persevere. Neither have I been, since the publication of my article in the last Number of this Journal, entirely unsupported; for I have received communications from many eminent physicians, both in Ireland and England, approving the course I have taken; and some periodicals, both medical and literary, have expressed a similar opinion. Thus in the Medical Gazette, of the 4th November last, the reviewer of my work on Clinical Medicine thus expresses himself: "Doctor Graves believes, in common with most professional men, that cholera is an imported disease. His description of its origin and progress is one of the best summaries of the history of this pestilence which we have seen: and the facts which he has adduced of its obviously contagious character are only confirmatory of what has been already published by Copland, Watson, and other eminent observers." The reviewer then proceeds to enumerate the chief arguments I have used, and concludes by declaring that the Medical Gazette had long advocated the opinion that cholera is contagious. On one point only I wish to set the reviewer right; the passages he quotes from the chapter on cholera in the second edition of my book, are all taken from a paper printed in this Journal in the year 1840, and consequently long before either Dr. Copland or Dr. Watson had written on this question. The London Literary Gazette of the 28th October, writing upon the same subject, remarks: "But still, as cholera does exist, and becomes more pestilent, it is good to hear what Dr. Graves states about it. Well, he seems to confirm a suspicion we ventured to intimate in our last

Gazette (in spite of all the non-contagionist theories about it), that the disease might be contagious; and we instanced its propagation into the town of Hull by a vessel from Hamburgh in support of this probability."

In a series of papers signed "Medicus Galvinensis," an able writer in the Dublin Medical Press has strenuously insisted upon the contagiousness of cholera, and has brought many important facts to bear upon the subject. As, however, the general expression of the metropolitan newspapers is adverse, and as the public mind must be much influenced by the specious arguments which their talented writers artfully decorate with eloquence, I am impelled by the danger which must arise from the propagation of error, again to raise my voice, and call on the Government, before it is too late, to make the necessary preparations for encountering this disease, when the epidemic reaches our shores. In a conversation which I had with a friend in the beginning of last September, I announced to him that this *vexata quæstio* was approaching a rapid solution, for cholera being then established at Hamburgh, the mode of its propagation would soon become evident. I reasoned that, if the disease extends itself by means of an atmospheric influence, it would arrive on every part of the east coasts of England simultaneously, or nearly so, and that consequently I should expect that, in the course of a few weeks from that date, the cholera would appear nearly at the same time in all the ports of England equally distant from Hamburgh; but that if the propagation of the disease depends on contagion, then we might look for its appearance only in those ports which had a direct communication with Hamburgh. The subsequent progress of events has afforded a most startling verification of this position, for, as I observed in a short letter in the last Number of this Journal, the disease has broken out in Leith, Sunderland, Hull, and London, all seaports communicating constantly with Hamburgh, while none of the intermediate towns between Leith and London have been visited, and for the simple

reason that there is no direct intercourse between them and Hamburgh. Facts such as these have made a serious impression on my mind, and have corroborated the opinion I formerly ventured to express, that the official authorities have, to say the least, acted unwisely in advising that cholera patients should be admitted into general hospitals, in place of preparing (as was done during the former cholera epidemic) special hospitals for the treatment of cholera. I asserted (and further reflection has induced me to repeat that assertion) that the mode of proceeding proposed by the Board of Health, that of admitting cholera patients into general hospitals, is likely to produce much injury, not only by endangering the lives of the poor patients labouring under ordinary diseases, but by alarming society at large, by collecting cholera patients in so many and different hospitals. During the former epidemic, the moment a poor patient was attacked with cholera, notice was sent to the proper quarter, and immediately a fitting convenience was provided, and the sick person was brought to a cholera hospital without delay. Thus, not only was a focus of contagion removed from the family where the sickness occurred, but the patient had the advantages of all those appliances which skill, combined with a liberal expenditure, could supply; and to the activity with which this system was pursued we must attribute the comparatively small mortality from cholera that occurred in this metropolis. In the name, therefore, of humanity, I implore the Government to pause before it puts into operation a course of proceeding which may be most pernicious in its results; and I call on the authorities to be guided by truth rather than by the false maxim, that it will be conducive to the tranquillity of the public mind to proceed on the principle that the disease is not contagious. But, alas! unconsciously I find myself falling into a serious error. I have recommended *truth*, and by my reasoning have endeavoured to uphold it; but what chance can there be of truth prevailing or of error being dissipated, when the great luminary which enlightens the mind of England, and serves as a

beacon to warn us of coming dangers, so far presumes upon the
ignorance and credulity of its readers as to dare to print the fol-
lowing puerilities(*a*) ? The *Times* of October 17th, in its lead-
ing article, thus proceeds: " The disorder has chiefly appeared
at Woolwich, but not in Woolwich generally; nor in the
river generally; nor in the convict ships generally, though
they all lie so close together; nor in the Justitia convict-ship
generally; nor in its lower deck generally; but on the star-
board side and stern thereof, particularly and exclusively, that
part being exactly opposite the mouth of a sewer which emp-
ties itself into the Thames."

I must confess that it rather puzzles me to make out how
the " *starboard side and the stern thereof*" can be called *that part*,
seeing that they form two very different parts of a ship; neither
can I understand how these two different parts, one of which
is at right angles with the other, can be *exactly* opposite the
mouth of *a* sewer ; but waiving this inaccuracy of language
on the plea that the Thunderer, as when erst enamoured of
Europa, still seeks gratification by making himself a—Bull,—
it appears, according to this new philosophy, that a malign
atmospheric influence arrived in the Thames, but of so thin,
curved, and laminated a nature, that it touched not any
of the numerous ships that lie *so close together,* but, winding
itself amongst them and leaving them unscathed, it poured
itself into this unfortunate sewer, from which it issued again
forthwith, directed against the starboard side and the stern of
the fated vessel.   In ordinary cases, when a malarious wind
reaches an opposing obstacle, such as the side of a ship, and
enters through windows or port-holes, those who have berths
at that side are evidently more protected from the direct influ-
ence of the vapour, than those who sleep at the opposite side;

(*a*) The greater part of the following observations on the Justitia and the
theory of the *Times,* were published in the *Freeman's Journal* of the 29th
October, and consequently a week before some judicious remarks on the same
subject appeared in the London Medical Gazette.

and, therefore, even supposing that the air was poured into the ship like a fluid, and only capable of reaching those who were in its direct course, it is quite evident that the persons occupying berths on the larboard side should have been chiefly affected, and not those on the starboard. But the atmosphere, (and it is the only medium by which the deleterious influence could be conveyed from the sewer) is unfortunately elastic, and whether it enters the hold of the ship by the starboard windows, or by the larboard, or by the poop, it immediately diffuses itself equally through the whole internal space; and besides, I beg leave to remind the writer in the *Times,* that the inmates of the ship, convicts though they be, do not remain like statues in a gallery, fixedly arranged at different sides opposite to each other.

But in fact the subsequent course of events has completely overthrown the hypothesis of the *Times,* and has altogether exculpated the accused sewer from the guilt of having generated spasmodic cholera; for the hulk Justitia having been removed from the suspected locality, it was at last found necessary, on account of the continued spread of the disease, to remove the convicts, but not until twelve had died, and thirty-seven sickened: and then we find suspicion transferred to the hulk itself, and forthwith it was ordered to be broken up! I have no returns which enable me to state the precise number of convicts who afterwards were attacked on board the Unitè(*a*); but the number was considerable; neither can I say how many took the disease in the Hebe and Sulphur receiving ships, to which they had been transferred from the Justitia; but in the Dreadnought hospital ship several died. I should like to know whether a pernicious sewer was opposite to each of these ships; but I rather suspect that even the sewers had now fallen into disrepute with the authorities, for in the

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(*a*) Five actually died in three days, from 7th to 11th October.

official returns of October, 30, we find it stated: " Almost all the cases of deaths, and even attacks amongst the convicts, have occurred amongst those who have been subjected to punishments, or confinements in the black-hole."

After this announcement we must of course suppose, that all such punishments were for the time abolished; and then indeed, what between a liberal allowance of anti-choleric tobacco, and a freedom from choleric punishment, it might be well said, " O felices *convicti* sua si bona norint !"

It gives me great pleasure to find that my views are fully confirmed by Mr. E. O. Spooner, of Bradford, in a paper read before the Dorchester Medical Society, on the 12th October, last, and published in the Provincial Medical and Surgical Journal of the 15th November. Mr. Spooner has touched on many of the subjects I treated of in my last paper, and his manner of considering the different questions I there argued is so identically the same as mine, that, had not his paper been read before mine was printed, it might have been suspected that he had borrowed largely from it. This is to me most satisfactory, and encourages me in the belief that my conclusions were founded on truth. Mr. Spooner says, that " We are not able to discover that any new facts have arisen respecting cholera, either with regard to its course, progress, character, or treatment. All the symptoms of the disease, when it has attacked any person, have been similar, and it advances in the same lines of commerce and human intercourse, taking about the same period to travel, in spite of opposing winds and every variety of atmospheric condition. The only difference has been in a somewhat more rapid march from place to place, correspondingly with the increased facilities of locomotion, and, in some degree, perhaps, to be accounted for from the abolition of all attempt at forming a ' *cordon sanitaire.*' "

I cannot conclude my remarks on this part of the subject without quoting what the Editor of the London Medical

Gazette(*a*) has written on it, and I beg to direct the reader's attention particularly to the fact connected with the period of the incubation of cholera; for it is clear that, had the female in question gone to an inland town and there sickened, the case might, and most probably would have been cited as a proof of the spontaneous evolution of cholera.

" Another fact worthy of remark is, that the cholera of the Justitia has not manifested any epidemic tendency. It has been confined to this convict ship alone. The latest reports inform us that the disease has not shown itself among convicts in other ships, or among the inhabitants of the town; and we are now quite at a loss to understand how the cholera poison from this Kentish sewer has been especially conveyed to the stern of the Justitia. If there has really been a local origin of this poison on the banks of the Thames, it remains to be explained how it is that the cases which have yet occurred in this country have been among the crews of vessels on our northern coast. Besides, before admitting the sewerage theory, it would be desirable to know why cholera has not shown itself among individuals living near the mouth of other sewers which drain much more extensive districts.

" The only ground upon which this sudden abolition of quarantine can be justified is, that intercourse between an infected and an uninfected port cannot be prevented with that degree of strictness which is indispensably necessary to prevent the importation of a disease. We are not yet quite certain as to the period of incubation of cholera.

" One of the recent fatal cases at Hull was that of a female who arrived in the port from Hamburgh on Saturday night, apparently in good health. There was no case of cholera on board. A few hours after her arrival she was seized, and died the following day. The fact that there had been no case of cholera on board, and that all are apparently in good health,

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(*a*) October 27, 1848.

is, therefore, not necessarily a criterion for safety. It appears to us that the Lords of the Privy Council have been somewhat premature in ordering the entire abolition of quarantine only twelve days after they had commanded its imposition. Such a sudden change in their views reflects but little credit upon their judgment; and the reason which they have assigned in their order does not justify their proceedings. They do not appear to have consulted our colleges, or to have taken any medical opinions; but they have allowed themselves to be guided partly by the views of a Board of Health, not constituted of medical men, and partly by the representations of those who are peculiarly interested in the entire abolition of quarantine. Admitting that we have the disease among us, its attacks have been limited hitherto to a few persons, and confined to a few localities. The Lords of the Council have resolved by this order that no British sea-port, however healthy, shall have any sanitary protection thrown round it.

" The proper course to have pursued would have been, in our view, to have maintained a limited quarantine with respect to all vessels from infected continental ports, making it more stringent when deaths from cholera had occurred during the voyage, or when the disease had not already shown itself in the British port at which the vessel might arrive. It is possible that, even with these precautions, not one of our sea-port towns would escape the disease; but the recent order in Council goes the length of licensing its immediate importation into healthy places, and each port may thus become a channel for the sure diffusion of the disease over the whole country.

" We must reserve for another time some remarks which we had intended to make on the diffusion of the disease by articles of clothing. Quarantine appears to be tried by an unfair test in restricting the proofs of its efficiency to the power of preventing the propagation of the disease from person to person. We believe that due inquiries are rarely made respecting the clothing of those who have died from cholera, and to this

secret and unsuspected source of propagation may be probably attributed many cases in which there is a failure of proof of personal intercourse."

Were the subject not so serious, we might smile at the reasoning of the *Times* and the folly of the authorities, who imposed quarantine as soon as it was ascertained that cholera had been actually imported, and abolished it shortly after, when it appeared that the supply was scarcely sufficient to infect the community; but the question is pregnant with consequences too important to justify even a passing air of levity; and a doctrine supported by sophistry, however absurd, is calculated to lead to consequences the most disastrous, as is feelingly shown by the Editor of the *Freeman's Journal*(a), who thus expresses himself:

"We discuss this question not with a view to sustain this theory or that, but because we feel it to be eminently a practical question at such a moment as this, when the dread visitant may be almost at our doors. The theory about to be acted on by the authorities is, that cholera not being infectious or contagious, no special care need be taken to sever the disease from the healthy, and, therefore, no special hospital with its accompanying expenditure (*hinc illæ lachrymæ*), is required for the treatment of the poor. God help the poor! Thrust the cholera patients into general hospitals, and you drive all other sufferers from the asylums erected for their benefit by the charitable and humane. Take the alternative,—leave them in their own miserable abodes,—and you consign them to certain death. How can the poor of Dublin be treated for cholera at their own homes? Any man who knows the social condition of Dublin, and the economy of the Dublin lodging-houses which the poor and struggling almost exclusively occupy, will not hesitate to pronounce it impossible. Several families not unfrequently occupy one room; several individuals one bed. Even where

(a) October 21, 1848.

a family has the exclusive use of a room, there is no " spare bed" for a patient; and if the bed be given up to the sick, all the other members of the family must sit shivering and sleeping in the cold.   Judicious precaution against disease !   Then where are the appliances for promoting warmth, so essential in the treatment of cholera ?   Blankets,—there is but one for the whole family !   Hot bricks, jars of hot water,—there is no fire even to warm a drink; not even a rushlight to give the colour of warmth to the room !   Yet it is here, and under such circumstances, our non-contagionist humanitarians would have the poor of Dublin treated for cholera: prepared for death would be, perhaps, the more proper phrase."

In reflecting upon the causes assigned by the non-contagionists to account for the spread of cholera, one is struck with the singularity of the fact that sewers, streams, rivers, and damp localities are blamed as the producers of this disease; for if a case of cholera occurs, and that the non-contagionists discover anything in the locality which can be accused of unusual dampness, whether it be a marsh, an arm of the sea, a drain, or a river, they immediately exclaim, " we are satisfied; we have found the ' fons et origo mali;' behold the source whose emanations have given rise to the disease." Satisfactory as this Εὑρηκα may appear to such gentlemen, I doubt whether the discovery will be considered as conclusive by those who are in the habit of reasoning more philosophically.   To such persons it will appear strange that the above enumerated sources of noxious miasmata should manufacture no vapours capable of producing disease during the hot summer months; and that during the most unhealthy months of autumn, likewise, they did not give rise to cholera, in August or September; but that in the months of October, November, and December, they should suddenly become endued with a power of manufacturing noxious vapours capable of infecting the neighbourhood.   The philosophical reader will, no doubt, admire the simultaneousness with which all the moist and low situations on the east

coast of England assumed in the beginning of October their new and fatal function; and he will consider it as a phenomenon unexampled in nature, that rivers, sewers, canals, marshes, rivulets, and filthy water nuisances, sources from which exhalations so different in chemical composition are usually evolved;—he will admire, I say, the unique law which derives, from causes so various, effects in every case precisely similar, viz., the production of a new specific disease. These who are satisfied with the maxim so generally adopted by mankind, " credo quia impossibile," have here abundant occasion for their faith; but see to what consequences this explanation, if persevered in, must lead us. The whole country will be despotically governed by parish authorities and sanitary committees; a new and unclassical *régime* will be formed; and its medical police, not content with the triumphs gained by flushing sewers, white-washing houses, abating nuisances, emptying dust-holes, and performing other *hyper-Augean* labours, will persecute water wherever they find it. Adieu then to the gods(*a*) who preside over fountains, over streams, over rivers; banished be the nymphs from our suburban villas; let nothing be thought of but thorough drainage, and let everything be superseded in the way of ornamental water, whether lake, cascade, or pond. It may be questioned, I say, when we have succeeded in extinguishing the chief beauties of our landscape, whether we shall have effectually exorcised the demon. May not the unclean spirit of cholera be one that "walketh through dry places"?—has it not dwelt on mountains, traversed the arid desert, and decimated the inhabitants of countries where water is not merely the chiefest but the dearest necessary of life?

(*a*) This reminds me of a strange error committed by a writer in an interesting article on Greece, published a few years ago in the Quarterly Review. He says it is very remarkable that the modern Greeks have ceased to use the word ὕδωρ, and have borrowed from the Turks the word νερον. So then our old favourites the *nereids* of Hesiod were christened by the Turks after all.

I feel by no means disposed to perform the operation of vivisection on a very active and well-meaning body of sanitary volunteers in this city; nor am I inclined to expose the utter futility of their attempts to keep the cholera out of Dublin by enforcing cleanliness. Neither do I believe that the means they possess will ever effect more than unkennelling half-buried and half-decayed odours. In the attainment of such an object, half measures render nuisances more offensive, and it is better, in many cases, to let them lie dormant than to stir them up into fresh activity. This principle was well known to Don Quixote, and was exemplified in the advice he gave to Sancho Panza on a certain occasion, to which it is now more seemly to refer than to describe. But it appears that these gentlemen have sought and obtained the assistance of the authorities, and consequently they have at once become formidable to their fellow-citizens, for they are now empowered to forward their measures by Act of Parliament; and in pursuance of the powers thus discreetly granted, I perceive that a meeting has been this day (14th November) summoned for the parish of St. Mark, in order to levy a cess for sanitary purposes. If such tax is only to be levied off the rich, it will, in the parish of St. Mark, amount to almost nothing; if it is to be wrung from the limited resources of the thousand pauper roomkeepers who inhabit that quarter of the city, then indeed will they have reason to curse the day that the means for purchasing food were diminished by contributions intended to remove nuisances, and in vain will they be told that they must pinch their stomachs for the general purposes of cleanliness. The sanitary committee may, by the force of perseverance and of the law, effect many of the objects they have in view; but I fear, even if they entirely succeed, they will have but converted the wretched dwellings of the miserable inhabitants into white-washed sepulchres. Had funds been raised sufficient to feed, clothe, warm, and lodge the poor inhabitants, had hospitals been provided for the reception of cholera pa-

tients, had means of carrying them to these hospitals the moment they were attacked been ready; then indeed, when the enemy arrived, some effective resistance might have been made, and if the plague could not have been averted, it might at length have been stayed. But, alas! nothing of the sort has been done; the public have been misled by the Government, and it is doubtful to decide whether the Government have been misled by or have misled their medical advisers, but in either case the poor will be the sufferers. If they are hungry it would be in vain to tell them that some neighbouring alley has been cleansed, and some adjacent sewer flushed. Hungry, chilled, and crowded together, they present meet fuel for the epidemic; and the more rational of them, when exhorted to be cleanly, will answer like the hungry negro, who, having patiently listened to a sermon addressed to him by a zealous missionary, and intended to convert him, submissively answered, placing his hand upon his empty stomach: " Massa, belly sick, bad palaver."

One great discovery has been made by the Board of Health in London, and which is announced in the following words(a) : " The places in which the pestilence is now numbering its first victims are the very spots which are known to be the filthiest in their respective districts, and to be the constant seats of typhus fever and other epidemic diseases. In tracing the individual cases reported to the Board of Health, the medical inquirers who, under the direction of the Board, have made a special investigation of the circumstances connected with the earliest attacks of the disease during its present visitation, have been led not only to the streets, courts, and alleys, but sometimes even to the very houses, *that are notorious as fever nests.*" So then it appears that the *fever nests* have mysteriously and unaccountably become cholera nests, that the same raw materials have been used for the production of a to-

(a) *Morning Chronicle,* November 3.

tally new manufacture, and that a new effect has been created by an old cause. But were not the localities indicated by the Commissioners nests not merely of fever, but of all diseases? Had not, during all seasons and in every year, scarlatina, measles, hooping-cough, and small-pox, hatched in such places? Are not these localities filled with the victims of indigestion, marasmus, scrofula, and itch? Are all these evils produced by the incubation of the same ova? If so, then Pandora's box has re-appeared in a new and more frightful form, even *Hope* is scared from its bottom, and all the evils to which flesh is heir may be caused by a superabundance of hygrometric moisture in the atmosphere(a). Upon the dampness of localities, and the wetness of the weather, the genius of observers has chiefly been exercised, as is exemplified in Dr. Adair Crawford's report upon the outbreak of cholera in Petersburgh in the present year; but do these gentlemen forget that there are places in Hindostan, where more than 200 inches of rain fall annually; that, during many months of the rainy season on the west coast of Africa, it is a constant deluge, everything flooded, the air so charged with moisture that it is impossible to keep anything dry, that the best leather decays, and the most carefully painted iron rusts? Do they forget that, in the great rivers of South and North America, the whole country, to the extent of forty or fifty miles on either side of the rivers, is flooded, and the civilized inhabitants obliged to reside in the tops of their houses, while their more savage brethren betake themselves to their nests constructed amidst the branches of trees? Do they forget the vast population which resides in the boats innumerable that cover the

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(a) November 13th.—I see that a correspondent of an English paper, writing from Berlin, under the date of November 6, says: "Cholera is fast disappearing in this city, although for the last ten days much rain has fallen, and the weather has been unusually damp." It is plain that this correspondent was neither employed by government, nor yet was he writing for the benefit of British capitalists.

surface of the great Chinese rivers? And yet all these physical causes, believed by these gentlemen to be capable of giving rise to cholera, have existed for ages, and have been powerless to generate this fell destroyer. The advocates for the production of cholera in England by means of the operation of physical causes asserted that in 1832 the actual outbreak of the disease was preceded by a certain change in the air, not sufficiently intense to produce actual cholera, but which gave rise to indigestion and various degrees of intestinal inconvenience, and even diarrhœa. This state of the air they assumed as a necessary precursor of the more noxious atmospheric changes that were soon to follow; and, knowing that their hypothesis would appear more credible if they persuaded the public that it had actually preceded the cholera, they at once set about manufacturing facts, and produced such a goodly array of assertions respecting the invariable prevalence of bowel complaints for weeks before the invasion of cholera, that their opponents were unable to answer their arguments without questioning their veracity, and thus the non-contagionists were necessarily triumphant, at least upon this part of the question at issue. But, alas! the accurate *data* which the Reports of the Registrar-General now furnish have entirely dissipated this illusion, for it is now proved that the public health was never in a more satisfactory state than it had been for some weeks before the outbreak of cholera! The atmospheric change, the passage from wholesome to noxious, must have been, therefore, so sharp, so well-defined and sudden, as to be *incredible*,—I say *incredible* advisedly, because it must be borne in mind that for many weeks *after the cholera had gained a footing* in Edinburgh and London in 1848, these reports prove that in all other respects the public health continued good. Is it then credible that the atmosphere could be thus interstitially changed, so as to be in its general mass more than usually wholesome, while it contained here and there isolated portions of deleterious air?

So confident do the non-contagionists appear in the truth

of the theory they advocate, that they scruple not (and here I must admit their honest candour) to introduce facts which evidently militate against their own opinion. Thus, in a circular printed by the Metropolitan Sanitary Commission of London, in the evidence of Samuel Rogers, Esq., Fellow of the Royal College of Surgeons, page 5, he states: " I shall conclude my remarks by noticing an idea prevalent in India, and as appears not without foundation, that cholera attaches itself to large bodies of men in camps, and is by them conveyed from town to town, if it is not in some instances generated by large assemblages of people. In 1831 the 45th regiment of Native Infantry, while on their march from Madras to Kolopore, was attacked with cholera, which moved along with them, infecting every village they passed through. They reached Ballary on the 1st of February, the disease not having been seen there for many months; on the 2nd several cases occurred in that place, and from this period ten or twelve deaths were reported daily. Cholera is a usual attendant at native festivals, where crowds of people are collected. At Juggernaut it is an annual visitant. The town of Pooree contains 35,000 inhabitants, and the number of pilgrims sometimes amounts to 150,000. The inhabitants are usually quite healthy before the occurrence of the festival, which takes place in June or July; but immediately on the arrival of the pilgrims, and when the lodging-houses are literally crammed with inmates, cholera suddenly breaks out, and in the course of a few days hundreds are cut off by it. This is not an occasional or accidental occurrence, it is an invariable one; and the disease which has been thus generated as suddenly disappears on the dispersion of the crowd, a few isolated cases only occurring for two or three days after the departure of the pilgrims." Now, in my humble opinion, these facts inflict a heavy blow and great discouragement on the non-contagionists, and it was evidently felt by the committee who were examining Mr. Rogers, that he volunteered to say in his concluding re-

marks what they would have preferred to have remained un-
said, for immediately some member of the committee took
him to task, and endeavoured to elicit, by subsequent queries,
answers which might help them to hobble out of the difficulty
into which they had been unexpectedly plunged.

Neither time nor space permits me to insert the queries
put, or the answers elicited; but the information thus gained
could not possibly shake the conviction to which the above
facts, stated by Mr. Rogers, must inevitably lead every impar-
tial inquirer. It might and did happen that a regiment affected
with cholera, and leaving the station at which the disease at
first appeared, would bring the seeds of disease with them; or,
to express the opinion of the non-contagionists more clearly,—
a body of men that in a station had inhaled the cholera mias-
mata, might not exhibit any symptoms of the malady for several
days, during which time they would have proceeded far upon
their march. This explanation is quite admissible, and may be
received, so far as regards the illness of the soldiers, in spite of
their change of place; but it altogether fails to elucidate how
the natives of the villages, where no cholera existed previously,
were attacked with the disease immediately after the arrival of
the soldiers.

With respect to the hypothesis, that the cholera was gene-
rated among the pilgrims or the inhabitants of the city, from
the mere fact of its being *over-crowded* during the sojourn of
the pilgrims,—it is too absurd to justify a serious examination;
while, on the other hand, all the circumstances of the case are
quite consistent with the doctrine of contagion.

It may deserve consideration how far we can account for
the cessation of cholera in towns, often long before the whole
body of the inhabitants are affected. The truth seems to be,
that a great number of constitutions are not susceptible of
the disease, or have it so lightly that the individuals are
scarcely conscious of its presence. This position is war-
ranted by the fact that during the prevalence of cholera, *as a*

widely spread epidemic, in any city, many people are found complaining of flatulence, slight nausea, diminished appetite, borborygmi, freeness of bowels, and other evident symptoms of gastric derangement : such persons, in my opinion, labour under the infection of cholera, and such cases are analogous to what we so frequently observe in persons exposed to the contagion of measles, scarlatina, hooping-cough, and even small-pox, and in whom the effect produced by the poison from each of these diseases is so slight that they are but slightly troubled, and they are not obliged to desist from their usual avocations.   When, then, in any society or city, a certain number of persons have been gravely attacked with cholera, and the great majority have had it almost without knowing it, then the disease ceases from want of individuals it can affect.   What the circumstances are which render the inhabitants of some cities liable to be struck with a heavier form of the disease in a greater proportion than the inhabitants of others, we probably shall never be able to explain ; but many instances might be brought forward, where in two neighbouring cities the population of the one was nearly destroyed, and the population of the other comparatively spared.   That such an occurrence is observed in other manifestly contagious diseases, is evident from the answers which I received to queries addressed to medical men practising in the various towns of Ireland(*a*), and from which answers it appears that scarlatina has for many years caused a great loss of life in some towns or villages, while it was either mild or even almost unknown in contiguous localities ; a fact exactly analogous to that which has excited so much astonishment with respect to cholera, and which, however unaccountable, is, therefore, not without parallel.

In confirmation of the conclusions derivable from these answers respecting scarlet fever in Ireland, a fact mentioned

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(*a*) See Clinical Medicine, second edition, vol. i. p. 324.

by Mr. Spooner in the Provincial Medical and Surgical Journal, already referred to, deserves special attention, for he states "that small-pox and scarlet fever frequently rage in Exeter, without extending to the adjacent villages, Topshaw and Dawlish. Will any one doubt the contagious nature of these diseases on that account?" adds Mr. Spooner. And he very justly considers this as quite analogous to what Dr. Shapter considered to be a very curious circumstance with respect to cholera, viz., " that the two first cases which occurred in Exeter came from two infected places, London and Plymouth, after which it spread to such an extent that 400 of the population died;" and yet he says that none of the adjacent villages were visited by the epidemic; Topshaw, Dawlish, and Crediton, having only a case or two, which did not extend further.

The great plague of London of 1665 supplies us with a very remarkable example of this apparent anomaly in the course of a disease confessedly contagious; for it appears, that of the 130 parishes in and about London, four parishes entirely escaped the infection, and some other parishes were free for months, while others were depopulated(*a*). Here, then, is an omission, on the part of the plague, of places, quite as remarkable as any of the *skipping motions* which authors have recorded with so much wonder in the case of cholera. We now see that such anomalies in its progress are not sufficient to take it out of the category of infectious diseases.

A very striking example of the escape of certain localities from the infection of cholera is mentioned by the intelligent Roman correspondent of the *Daily News* of the 16th November last, viz., that during the last epidemic of cholera at Rome, the " Ghetto," a part of Rome inhabited by the Jews alone, altogether escaped. Now it is perfectly well known to all those who have visited the Eternal City, that this very quarter is re-

(*a*) See Vincent's " God's Terrible Voice in the City," printed in 1667, and other authentic accounts of the plague of 1665.

markable for a concentration of every nuisance, whether solid, fluid, or gaseous, that is capable of exciting disgust or causing disease. If, then, unflushed sewers, stagnant cess-pools, noisome dunghills, and all the countless abominations which render the quarter inhabited by the descendants of Abraham(*a*) a byeword even among the Romans,—themselves the filthiest of Christians,—if, I say, cholera spared the Jews inhabiting such a locality, can cholera be produced anywhere by those agencies, on which the advocates of dirt and want of drainage as its causes, so confidently rely?

The progress of cholera in England, in 1832 and 1848, exhibits the extreme difficulty with which it gained ground, a difficulty exactly such as a contagious disease might be expected to exhibit in a country whose inhabitants live in separate families and in distinct houses, and where the fear of contagion most effectually prevents persons from holding, at least willingly, any communication with infected individuals. In consequence of these difficulties, cholera has to struggle long before it gains admission into Great Britain; and several months may be reckoned on as the duration of the struggle both in 1832 and 1848. In Leith and Edinburgh cholera spread in both cases with greater rapidity than in Hull, Sunderland, and London, and for the simple reason that in Scotch towns the houses, especially in Edinburgh, are constructed after the continental fashion, and each residence includes many families, who gain admission to the different *flats* by a common staircase; these circumstances facilitate the propagation of contagious diseases; and the more rapid diffusion of cholera in Edinburgh than in London is, therefore, an additional proof of its infectious nature. With reference to this explanation of the more rapid diffusion of cholera in Edinburgh than in London, I may remark, that my

(*a*) Who is to blame for this wretchedness of the Jews in Rome, Prague, and other continental cities? Certainly not the Jews themselves. They are "cabin'd, cribb'd, confin'd" sorely against their will; and Christendom cannot be called civilized so long as *they* are kept in such a state of thraldom.

views are borne out by some observations of Mr. Spooner's, who says, " That in England the general immunity from cholera, at the period of its last inundation, arose probably from the fear of contagion inducing strict measures of separation and cleanliness, as well as from the comparatively small population of our towns, and the scattered character of our villages, and the *cordon sanitaire* of our cultivated fields and belts of downs." This quite agrees with my hypothesis ; for I am persuaded that it is the comparatively complete isolation of English families, whether poor or rich, that renders the inhabitants of England less liable to depopulation from contagious epidemics than continental countries ; and consequently the rational physician and the prudent legislator should avail themselves of this advantageous condition of the English population, and should have recourse to such measures as will tend still further to check the progress of disease. I quite agree with Mr. Spooner, that the avowal of the truth, either with regard to cholera or the plague itself, is not likely to be productive of mischief, but, on the contrary, to induce wholesome measures of caution, such as have been before employed with success in preventing the spread of cholera. Thus he says : " In the little village of Bere, in this county (Norfolk), there were, in 1832, twelve cases of genuine Asiatic cholera, of which six proved fatal. The first case was of a person who came from London. Great care was taken to separate the sick from the healthy, and the disease did not spread to any adjacent village. A few cases of cholera occurred at Pool and at Bridport in this county," he adds, " but strict attention to cleanliness, ventilation, and those cautions suggested by a general belief in its contagious properties, contributed very much to arrest the progress of the disease." I am quite aware that many persons are alarmed at the notion that cholera is contagious, and think that society is threatened with a greater evil, if this statement is true ; this view of the subject can easily be shown to be fallacious, for if cholera be a disease

depending on general atmospheric influence, its propagation cannot at all be guarded against, and the exertions of man will be of no more efficacy in impeding its progress than they would be in arresting the march of influenza: but if the disease spreads by contagion, human means may manifestly, on many occasions, be brought into play with benefit. This view of the subject ought, therefore, to prove more consoling to the mind than the other.

The length of time which cholera takes to make its ground good in England, amounting, as I have shown, to at least a few months, establishes the difference for which I before insisted between the influences that gives rise to the propagation of cholera and of influenza. Let us take as an example the influenza of 1847 (an account of which has been published by Dr. Peacock), and it appears that the epidemic in London was most active from the 22nd to the 30th November, having commenced about the 16th or 18th of that month, and ceased to be very prevalent between the 6th and 8th of December. The influenza, therefore, arrived at its maximum in about a week from its first appearance, and, continuing to rage with intensity for about eight days, then declined so rapidly that in ten days more very few were afflicted. In a work upon cholera published by Dr. Gavin Milroy, he writes much upon the analogy that exists between the spreading of cholera and of influenza, in order to prove that the former, like the latter, depends on the atmosphere for its propagation; but, in my humble opinion, he has been altogether unsuccessful in his attempt, nor do the facts which he has rather ingeniously brought forward justify me in altering the opinion I have already expressed in my Clinical Medicine, that the spread of influenza is strikingly different from that of cholera. We have seen already how much more suddenly the former arrives at its maximum; let us now examine the rate at which the influenza of 1847 travelled, and compare it with the rate at which cholera progresses.

The epidemic was raging at Constantinople in August, and it affected the south of France and the shores of the Mediterranean in October. In Paris it commenced about November 27, and was at its height on December 4. In Madrid it was very general on the 11th and 19th of January; and in Geneva it appeared as a casual disease in the first week in December, suddenly became very prevalent about the 20th, declined during the course of January, and had almost disappeared by the commencement of February. Observe what an extensive zone is occupied or overshadowed by the atmospheric influence producing influenza, and how rapidly that shadow overspreads all the country round and included between Constantinople, Geneva, Paris, Madrid, and London, an immense tract being thus occupied by the disease in less than three months. How different this from the slow progress of cholera ! Again, how evidently do these two diseases differ as to the proportion of persons attacked by them :—thus in Christ's Hospital, Dr. Peacock relates, that of the 1000 boys, 350, or about one-third, were more or less affected by the disease in three weeks; in Paris, between one-fourth and one-third of the population is said to have suffered from the influenza in 1847; and in Geneva the proportion affected is said to be not less than one-third; while the epidemic influenza of 1837 affected fully one-half the inhabitants of London and of Paris. Here again, the difference between cholera and influenza, is so striking as to require no further elucidation.

The Board of Health, both in Dublin and in London, and the College of Physicians in the latter city, here it appears to me, incurred an immense responsibility; for they have asserted that nursetenders and others, whose duty brings them into immediate contact with cholera patients, are not more liable to contract the disease than individuals who never approach such patients. It will be seen just now that this assertion is altogether unfounded; but, in the mean time, I may

observe that, granting that in well-regulated hospitals, or in well-ventilated houses, the nursetenders and physicians generally escape, this frequent immunity on their part is no proof of the non-contagiousness of the disease; for, as Medicus Galvinensis, in the Dublin Medical Press of the 1st November, 1848, very sensibly remarks, " while admitting all this, I ask, is not the same true of *all other confessedly infectious diseases ?* In how many instances, during the late epidemic fever, have I in vain endeavoured to trace infection? How often, in the prosecution of my dispensary labours, in remote and isolated hovels, have I been assured in such and such a case, such a cause could not have operated; and do I, or does any man, doubt the infection of typhus? How often, in private practice, when I knew the habits of a family, or could depend upon their co-operation, have I, upon the occurrence of fever, calmed their minds, by stating confidently that, with the most ordinary precautions, the disease would not spread; and, even in protracted attendances upon the worst forms of fever, this confidence has hardly, in a single instance, been disappointed; and yet, upon this weak argument of the immunity of medical and hospital attendants, how many anti-infectionists ground their belief!"

Nothing is more common than to find cases of measles, scarlatina, or hooping-cough, occurring in families living in the country, and in whose neighbourhood we cannot discover that any other similar cases exist; in all such instances, however, no one ever dreams of attributing the origin of these diseases to the atmosphere, or to local *miasmata;* on the contrary, every rational physician explains the occurrence on the supposition that such cases originated in infection, although he has been unable to discover its source in this particular instance. The hypothesis of the contagiousness of cholera, by no means, therefore, presupposes the possibility of our being able always to point out the sources of infection in each case.

My friend Dr. Little, of Sligo, writes to me upon this

subject: " I care not for your proofs of negation, let them be ever so numerous. I have had three of my own children in the nursery with three other of my children in the hooping-cough, and yet they never took it. I have had fifty cases of typhus fever this season, in houses with large families, and no second person in any of these houses took fever. Am I then, from these facts, to conclude that neither of these diseases is contagious? I care not, I say, for fifty negative facts; give me one positive fact, it is worth a thousand of them; and if cholera *is rarely, if ever, contagious,* I say it is madness not to act as though we believed it to be universally so; and yet the Board of Health, both here and in London, force us to act as if the disease never was contagious, and they assure us that no one will incur any danger by this mode of proceeding."

The following paragraph, taken from an article in the *London Evening Mail,* and published some time towards the middle of last November, contains so complete and well-digested a *resumè* of the chief errors I condemn, that its preservation seems desirable, if it were only for the purpose of enabling our successors to form a just estimate of the sanitary theories now promulgated *by authority.* In speaking of the new notification of the London Board of Health, the writer in the *Mail* observes:

" It will be seen from the important documents which we this day publish, that the highest authorities of the country agree in calling the cholera *ep demic* rather than contagious. They very wisely do not commit themselves either to the contagion or the non-contagion theory, confining themselves to a practical view of the disease. *Experience* proves that there is no perceptible danger in waiting upon cholera patients, and that whoever runs away from them is, in fact, avoiding an imaginary peril. The touch, the breath, the smell, or whatever has to do with the person of the patient, is as innocuous as the mere spectacle of suffering. To all intents and purposes, therefore, there is no contagion of the disease. But that same expe-

rience indicates certain almost uniform antecedents of cholera. Whatever has usually caused a dispositison to typhus, to scarlet fever, and other epidemic diseases, will now produce cholera. The inhabitants of the same house, or court, or district, are affected by the same injurious circumstances. It is not the breath of one another that affects them, but the air they all breathe, the common miasma of the dunghill, the cesspool, the sewer, or the Thames. Certainly, as one passes along even the more open streets of the city, one may perceive how superfluous it is to suppose a more lethal effluvia than that which a whole neigbourhood is often forced to breathe. The mouth or the hand of the cholera patient cannot be more deadly than the fetor which the grate vomits forth night and day, or which stagnates over the unspeakable abominations of ' the court within a court.' Meanwhile there is an immense practical difference between the words ' contagious' and ' epidemic.' The former blinds people to the facts of the case, and deters them from its duties ; the latter directs attention to the most important facts, and enforces the duties by the additional stimulus of self-preservation."

The wisdom for which this writer in the *Evening Mail* gives the Board of Health credit seems to me to be of a very questionable nature ; for he praises the Board for not committing themselves to the contagion or non-contagion theory, but for confining themselves to a practical view of the disease. Now it seems evident that the Board of Health manifestly committed themselves to the non-contagion theory, for all the directions they have given on the subject proceed on the principle that the truth of this theory has been demonstrated. We find also that the writer states, " that whatever usually causes a disposition to typhus fever, scarlet fever, and other epidemic diseases, will now produce cholera." This is, assuredly, most miraculous, that any given emanation from a sewer, or any other given exhalation from damp ground, can at any one time produce typhus fever, at another scarlatina, at another (for all

these come under epidemic diseases) small-pox, or measles, or hooping-cough, or influenza. I find this new theory, industriously supported by the Board of Health and the daily Press, has found adherents in the profession. Thus, Dr. Ogier Ward, in a debate at the Westminster Medical Society, November 4, and which is reported in the Medical Gazette of November 17, " referred to scarlet fever as epidemic in Kensington and Fulham; he traced its prevalence to bad drainage; on improving this, the disease was mitigated, and then disappeared." If Dr. Ward's method of removing scarlatina succeeds, there is no end to the benefits to society that must result; for, under a complete system of drainage, we may expect all the other epidemic diseases to cease. It would be well to chronicle the divers evils, to register the various species of manslaughters, any sewer " that exhales the lethal effluvia" of the writer in the *Evening Mail* commits from time to time. In January, therefore, it vomits forth scarlet fever; in February, measles; in June and July, typhus; in August, hoopingcough; in September and October, small-pox. Such has been the offensive course of these criminal sewers for several centuries. But lately, tired of the monotomy of effect hitherto produced, they have added, by way of variety to their home manufacture, a new and special disease termed cholera. Such are some of the important facts, to which the writer in the *Mail* alleges the epidemic theory will conduct us. I must confess that I am among the number blinded to the facts of the case as he teaches them. But, nevertheless, I do not feel myself discharged from the duties which my belief in its contagion inculcates. I have no doubt that the modes of preservation which are derivable from that belief would be much more efficacious and useful to society, than all the efforts of those who inculcate the necessity of universal drainage. To me it appears that the sum and substance of accurately verified facts prove nothing strange in the progress of cholera; nothing to distinguish it from the manner in which other contagious

diseases are propagated   True it is that wonders have been daily published, and miracles recorded, concerning its mode of travelling, and manner of attacking towns, peoples, and armies. But, like most modern miracles, an accurate examination strips them of all pretensions to that character, and shows that a be-lief in them is founded on misrepresentation and inaccuracy, frequently, perhaps, unintentional, but always blameable.   I think that I have shown to the satisfaction of my readers, that the so-named vaunted peculiarities of cholera are shared in common with it by other contagious diseases; and, if I am not mistaken, I have proved that in its diffusion it obeys the same laws with them; and if this be true, it follows, as a necessary consequence, that all proceedings founded on the recommenda-tion of the Boards of Health in London and in Dublin are at once injurious to the public health and unjust to the patients attacked, for the non-separation of patients increases the diffusion of the disease, and renders it impossible to supply to the sick the attentions they require.   The injury that will ac-crue to the profession if the present epidemic becomes formi-dable is sufficiently obvious; for, as there will be no hospitals in which cholera patients can be treated, physicians will be distracted by the multiplicity of calls; they will be fatigued by going from one abode of misery to another; they will be dejected by finding everywhere a want of those appliances that are actually necessary; and finally, being worn out by an at-tempt to discharge duties that are beyond their strength, and utterly impracticable, they will resemble a *forlorn hope*(a) or-

(a) Military and civil writers of the present day seem quite ignorant of the true meaning of the words *forlorn hope.* The *adjective* has nothing to do with despair, nor the *substantive* with the " charmer which lingers still be-hind:" there was no such poetical depth in the words as originally used. Every corps marching in an enemy's country had a small body of men at the head (*haupt* or *hope*) of the advanced guard, and which was termed the *fore-lorn hope* (*lorn* being here but a termination similar to *ward* in *forward*), while another small body at the head of the rear-guard was called the *rear-lorn hope.*—See " A Treatise of Ireland by John Dymmok," p. 32, written

dered by a bad general either to lay down their lives or perform an impossibility.

The following facts are humbly submitted to the consideration of the Dublin Board of Health, who have been so kind as to inform the profession and the public that they are " anxious to impress on all persons the important difference that exists between fever and cholera, with respect to the mode of propagation of these epidemic diseases. Fever, it is well known, is highly contagious, while all experience proves that cholera is rarely, if ever, contagious."

Although I do not exactly understand how a disease can be *rarely* contagious, still the expression is intelligible; but when the Commissioners of Health assign yet stricter limits to the extention of the word *rarely*, and say, " *rarely, if ever, contagious,*" I must confess myself utterly puzzled. Let us examine, however, how far cholera deserves to be called a disease *rarely contagious;* for the present we must leave *if ever* out of the argument, reinforced though it be by the aid of experience,— no, I beg the Commissioners' pardon, *all* experience,—that is their precise expression ! !

In a letter I have just received from Dr. Simpson, of Edinburgh, he states: " In our hospital here for cholera four nurses have been already attacked, three fatally." Dr. Dillon writes me word that in Tuam four out of ten nuns, who charitably employed themselves in attending the sick in 1832, caught the disease, and two died; while three of the men who were employed to bury the dead died: and in Castlebar two out of five medical men, who attended cholera patients, died. Dr. Little, of Sligo, informs me, that of nine medical men

about the year 1600, and lately printed by the Irish Archæological Society. A reference to Johnson's Dictionary proves that civilians were misled, as early as the time of Dryden, by the mere sound of a technical military phrase, and in process of time even military men forgot the true meaning of the words. It grieves me to sap the foundations of an error to which we are indebted for Byron's beautiful line : " The full of hope, misnamed forlorn."

attending the sick in Sligo, seven died in the course of three months.   These facts strongly confirm the statements sanctioned by the Board of Health in Dublin, *that all experience* proves that cholera is rarely, if ever, contagious, and that there is *no danger* to those who attend *cholera.*

Mr. Beatty, the apothecary who died in Sligo, was a Tirera man, and when he died his clothes were bundled up and sent to Tirera: the girl who took them to the river, where for safety they were sent to be washed, was attacked with cholera that night and died.   Dr. Simpson states that cholera broke out very violently last week, within three miles of Edinburgh, in some paper mills. Three young girls were first attacked; they were working at a paper mill, among rags imported from the Continent, where not yet ascertained. That articles of furniture may become infected and give rise to the disease, is proved also by the following remarkable cases, which Medicus Galvinensis, whose able papers in the Dublin Medical Press I have already spoken of, has communicated in a postscript to his last paper.   As I have the happiness to know the talented author who has assumed this *nom de guerre,* I can testify that every reliance can be placed on his facts.

" The following remarkable cases occurred in the practice of Dr. Nelson, of Killala, county of Mayo, by whom they have been kindly communicated to the writer :—' When cholera raged at Ballina, as elsewhere, the panic was considerable ; they buried clothing, and destroyed bedding, &c., by throwing them into the river Moy. About a mile down the river a fine feather bed was seen floating by a woman, who carried it off about ten miles from Ballina, to the village of Mullinacrush. She was seized with cholera that night, and died in a few hours. Her sister in the same house sickened and died in a few hours after. Three children in the same house were all attacked, of whom one died, and the immediately adjoining houses were attacked. A female friend, who lived in an isolated cabin, visited this house, and was attacked immediately

on her return, and died. No other cases occurred in the neighbourhood. A stone-cutter employed at the Roman Catholic cathedral of Ballina, who had a house about five miles distant, at Moyne, near Killalla, had some of his children with him at Ballina; one of them sickened there and died. He then sent the rest to the mother at Moyne (three in number), these sickened and died. A journeyman who lodged in the house with this man's wife, at Moyne, took fright and fled to Killala. He took ill the day he arrived at Killala, and died. Immediately after the malady spread all over the town of Killala (his being the first case there), several cases occurring in the mean time at Moyne, all of which died refusing medical advice and assistance.' "

The following fact, bearing on the same question, rests on the same authority: " Cholera first appeared in Tuam (county of Galway) on the 4th of June, 1832, having attacked Galway, the nearest sea-port, on the 12th of May preceding. The first case was a fish kedger's wife, *who had purchased the clothes of a woman who died in the cholera hospital of Galway.* She died the following night. Her sister, from a remote part of the town, who attended her and washed her body, was the second. A relative from a neighbouring village, who also attended her, and assisted in the washing, was the third. None lived above twelve hours.

" Cholera ceased for the first time in Tuam in August; the bedding was all put up clean in store. In September, the court-house (which had been our hospital), was required for the sessions; Mr. Hartnett, the dispensary apothecary, with two other persons, were employed for nearly a whole day in the removal of the stores. *Mr. Hartnett and one of the men were seized with cholera the following night, and both died.* There had not been a case of cholera in Tuam for upwards of a month.

" Mrs. Thornton, the widow of an old horse-breaker, entered a house where Dr. Little (at present of the Sligo infirmary),

the principal medical officer of the Tuam cholera hospital, and
Mr. Rothe, the Protestant curate of the town, were: they had
just left the hospital, after a protracted visit. She immediately
on entering expressed herself faintish and impressed with a
disagreeable smell. In less than an hour she was in the full
collapse of cholera. Her son, an ill-conducted drunkard, en-
tered the house on the alarm of his mother's illness, rudely
denied it, and wished to prevent her conveyance to the hospi-
tal: to show his disbelief he kissed her several times. At 2
o'clock, A. M., he was brought to hospital, where both died
in a few hours. During the first irruption of the cholera we
lost six nurses and four porters, having six of each.

"A few days after this a prostitute arrived in town with a
detachment of military. She was seized with cholera on
her arrival, and died that night. Her death was followed by
three others, all within half a dozen doors of the house in which
she died. Mr. Robin Potter, linen merchant of Tuam, who lived
in the immediate neighbourhood where these cases occurred,
was attacked with cholera a day or two after. I attended him
in consultation with Dr. Bodkin, at present of that town; he
lived but nine hours. During his illness I had repeatedly
warned his maid-servant, who was uselessly officious in her
attendance, and hung over his person, sobbing, and wiping his
face, to take more care of herself; the following day she was
attacked with cholera, and died in the hospital. A relative
who came from a village in the country, to see her in hospital,
was attacked the following day, but recovered. The man
who placed this gentlemen in his coffin was attacked the same,
and died the following day. Mary Qualter, the servant maid
of a Mr. Egan, a solicitor, who lived in the adjoining house to
No. 1, had attended her friend in No. 2, before her removal to
hospital; she was seized with mild cholera the following day,
and recovered."

The following facts tend to prove the correctness of the
opinion published by the Board of Health, that persons ought

not to be afraid to approach cholera patients; that in truth, if there is no apprehension there is no danger.   Dr. Little, says that in Sligo, in 1832, a man of the name of Middleton, who was rather an enthusiast in all he did, placarded his house and all the town thus, "fear is cholera, and cholera is fear;" and he preached about the streets on this text, warning the people against entertaining fear.   This man went most zealously and fearlessly to all infected places, to prove his doctrine; but, like Maclean and Wright, who died of the plague, he caught the cholera and died a victim to his own theory.

After recounting some cases, manifestly proving the contagious nature of cholera, Dr. Little thus proceeds in a letter with which he has favoured me:

" The idea of the contagious character of cholera was forced upon me when it was scarcely a contested point, and when there was not that opposition to the opinion, which only has the effect of strengthening prejudices.   In fact there was scarcely a single case which I had, out of 550, attended in Tuam in 1832, which I could not and did not palpably trace to contagion, as satisfactorily as ever such a tracing could be effected.   Every case of cholera which came from any house was followed by one, two, or three more; and in many instances where patients returned from hospital, cases were brought into hospital, from the houses into which they went, within twelve or twenty-four hours of their entrance.   We lost four nurses out of ten, and three porters out of nine employed died; insomuch that, of the several medical men we had attending the hospital, not one remained who entertained the slightest doubt of the contagious nature of the disease.   I kept in my house the medicines which we had for the hospital, over and above those in absolute use: they lay in my study.   One day, in my absence, two of the porters, though prohibited from coming to my house, were sent down for medicines.   My sister-in-law, Mrs. Westropp, brought the key to them into

the hall, when she fancied that some peculiar odour arose from
these men; she that night sickened, and suffered a very severe
attack of the disease, being dangerously ill; the maid-servant
who attended her sickened two days afterwards, and was also
very ill."

As to the testimony of the French physicians respecting
the contagiousness of diseases, Dr. Little, of Sligo, observes:

" My intelligent friend in Sligo, Dr. Power, who has spent
much time in attending the hospitals in Paris, tells me that they
indiscriminately admit or leave cases of typhus fever among
the other patients; for, even in their lying-in hospitals, he
frequently saw the disease extending to patients in the adjoin-
ing beds. He remonstrated with some of the most eminent
men in Paris on the subject; they admitted the fact, but still
continued the practice."

Surgeon Ellis, of this city, has kindly imparted the con-
tents of a letter received from Mr. Heath, of Arklow, dated
October 25, 1848, in which he says:

" I have received your's of the 24th inst., and assure you
that I feel pleasure in forwarding to you any information in
my power to give. As to the mode of introduction of cho-
lera into this town, you are quite right. A fisherman named
Kenny, seeking the price of oysters sold to a person living in
Great Britain-street, in Dublin, was told that the party who
owed him the money was lying dead of cholera in the room
adjoining the shop or cellar; he waited, however, until he ob-
tained the money; and on his passage from Dublin to Arklow
was attacked with cholera, and died on the following day in
his own house. The second and third cases of cholera which
happened in Arklow were persons who had been in attendance
on this fisherman, and his wife and child were the fifth and
sixth cases. During the first outbreak the cases were nearly
confined to our fishermen. The impression on my mind was
and is, that the disease is decidedly contagious; but I would
say not at all so in the first stage, but some few hours before

death, when I always observed a peculiar and unpleasant unctuous feel in the skin, and a fetid exhalation from the body, to which, whether rightly or not, I attributed the danger of infection."

Dr. Swan, of Kingstown, has obtained for me an account of the following case:

" A man named Sweetman, belonging to Balbriggan, died of cholera in Dublin, five or six weeks after cholera had ceased in Balbriggan. His body was brought to Balbriggan for interment. Four of his relatives, named Sweetman, carried the coffin to the church; all of these men were attacked, and two of them died. And, while the coffin was in the chapel, several children got into the hearse to play; they were attacked with cholera, and some of them died."

The following instance of the mode in which cholera first appeared in a small village, in the west of Ireland, has been furnished to me by Mr. Wilde:

" In the summer of 1832 cholera devastated most of the large towns of Connaught, particularly Sligo, Castlebar, and Galway. Acting on the idea that the disease was contagious, the magistrates and local Boards of Health instituted a sort of sanitary cordon around their respective localities, in order to isolate themselves, as much as possible, from the spread of the disease from surrounding districts; and beggars and travellers in particular, or persons coming from any of the seats of the disease, were prohibited from entering any of the small towns, or approaching a habitation in any way; and, besides the police, a description of special constables were employed to enforce these regulations.

" I was employed to attend cholera in the district of Kilmaine, in the summer of the year referred to. This village (which is on the road between Galway and Castlebar, two places then devastated by cholera), is situated on an elevated ground in the midst of an open country, principally of pasture land, and then contained about 400 inhabi-

tants; it is approached by three roads, which meet in the centre, and its streets are wider than in most villages in Ireland. For many weeks the sanitary cordon was preserved with great strictness, and no one was permitted to remain in the town, who it was believed had come from any of the infected places around (of which Ballinrobe was one), until a family removing from Galway to Castlebar arrived late at night in the village, unknown to the police or the usual watchers, and took up their residence at the house of a man named Mulvey, a shoe-maker, where they remained till morning, but departed early, fearing the police, &c. I subsequently learned that this family proceeded to Castlebar, the wife being at the time ill of cholera, where she died a few hours after her arrival. The next day the shoe-maker, in whose house the family had sojourned for the night, was attacked with cholera. As soon as it became known, the greatest consternation prevailed throughout the village; all work ceased, and people shut up their houses. I hastened to the place, and with considerable difficulty I could procure a bed for myself. The case lasted more than two days; the man appeared to die of the consecutive fever, he was quite alone in the house, and no one, except myself, would approach him: he had no attendance whatever. A grave was dug immediately, I placed the body in the coffin, and drew it to the door, where, for a considerable reward, a man placed it upon a car; it was then brought to the graveyard and buried, about six hours after death. The windows of the house were then burst in, and a quantity of unslacked lime thrown in through these apertures, until the bed, and all the furniture of the room in which the man had lain, were consumed; the door was locked, and no one allowed to enter, I believe, for the next fortnight or three weeks. No other case of cholera occurred in this village or district afterwards."

The above short narrative of the circumstances which accompanied the outbreak of cholera in the village of Kilmaine is very instructive, and the favourable result of the precautions

so promptly taken ought to encourage others to adopt similar measures whenever a case of cholera occurs in any place. It is true that a practitioner who thus acts incurs the fearful responsibility of disobedience to the orders of the powers that be; but if he nevertheless succeeds in preventing the spreading of the disease, the satisfaction he will feel may be considered as a sufficient compensation for any damage his success must necessarily inflict upon the character for infallibility, so modestly assumed by the Boards of Health, both in London and Dublin. It gives me sincere pleasure to find that the enlightened physicians of Belfast have refused the guidance of that official dark lantern,

" Which none see by, but those that bear it"(a),

and availed themselves of the means reason and experience point out as most likely to be serviceable at such an emergency. Accordingly, on the arrival of an individual from Glasgow, who had contracted the disease in an infected house in that city, they immediately placed him in a separate ward, with special nurses to attend him, and on his decease they caused all his clothes, and the bed and bedding, to be burned.

Art. II.—*The Results of some Experiments respecting the Presence of Urea in the Liquor Amnii and Fœtal Urine of the Human Subject.* By Alfred H. M'Clintock, M. D., F. R. C. S. I., Ex-Assistant of the Dublin Lying-in Hospital; Lecturer on Obstetric Medicine at the Medical School, Park-street, &c.

In the month of January, 1846, I examined the body of a male child, who had died a few moments after birth at the full term. Externally it presented no unusual appearance, except that the abdomen was rather tumid, and upon cutting into it there

(a) Hudibras.

was found in the right side a large cyst containing a transparent straw-coloured fluid. For a moment Dr. Denham (who was assisting at the autopsy) and I were at a loss to imagine what this was, but upon further scrutiny we discovered it to be the *right ureter* most enormously distended and very much convoluted. In some parts its diameter was fully an inch and a half, and no where less than one. The ureter of the opposite side was in the same condition, and the two together, from their great size and tortuosity, occupied a very considerable space in the abdomen. The urinary bladder was perfectly empty, and, as may be anticipated, was very small and contracted. The urethra was pervious throughout its whole course. It is much to be regretted that the renal secretion found in the dilated ureters, and which in quantity could not have been less than a pint and a half, was not submitted to chemical examination; its sensible qualities, however, were these: it was almost devoid of smell, had a slightly saline taste, and, as before remarked, was perfectly translucent and of a pale-yellow colour. It is almost superfluous to mention that the vesical extremity of each ureter was imperforate.

This is by no means a unique case, but its history is recorded as it affords corroborative evidence of the fact that the kidneys commence the office of secretion some time prior to birth; and also because it led to those experiments, the results of which form the substance of this paper. From the careful consideration of a few instances of a similar nature to the above, Dr. R. Lee arrived at the conclusion that the secretion of urine goes on for a considerable period antecedent to parturition at the full term(*a*); which opinion, I need hardly say, is directly at variance with that generally entertained by obstetric writers at the present day. How this notion, that the kidneys were inactive during intra-uterine life, could have orignated, or have

(*a*) Dr. Lee's paper, ''on the Functions of the Fœtal Kidney,'' will be found in the nineteenth volume of the Medico-Chirurgical Transactions.

received currency, I cannot imagine, as every one at all en-
gaged in the practice of midwifery must have over and over
again observed infants to void urine, and sometimes very freely,
immediately after birth; besides this many of the older physio-
logists believed that the urine of the fœtus constituted a large
proportion, if not the entire, of the liquor amnii. (*Deusing
Arantius, Carpensis, Riolan*(a)).

There are now several recorded cases of congenital obstruc-
tion in some part of the urinary conduits giving rise to an un-
natural accumulation of the renal secretion. Thus Dr. Lee,
in his paper already alluded to, has brought together seven
examples of this malformation. Dr. Fearns has described one
that he met with in his practice(b); and Dr. Montgomery has
given the account of another that came under his own obser-
vation(c) ; and it is very possible that a diligent search through
the works of authors might discover other instances.

II. With a view to obtaining further information respect-
ing the secretion of urine before birth, Dr. Lee had a specimen
of liquor amnii, which he drew off with a canula from a woman
six months pregnant, analysed by Drs. Prout and Bostock, but
they could not discover any traces of urea, or uric acid, in it,
upon which Dr. Lee remarks: " This observation renders it
probable that at the sixth month of utero-gestation a very
small quantity, if any, urine is formed by the fœtal kidney, and
passes into the amnion." Several experimenters have analysed
the fluid contained in the sac of the human amnion, but with
very opposite results as regards the presence or absence of urea.
It may be well, therefore, to take a hasty glance at the obser-
vations that have been made towards deciding this point, as
their results will be seen to bear a close relation to the further
steps of the present inquiry.

The experiments of Fromhertz and Gugert have been fre-

(a) Haller, *Elementa Physiologiæ*, tom. viii. lib. xxix.
(b) Lancet, May 9. 1835.
(c) Cyclop. of Anat. and Physiol. Art. " Fœtus."

quently adduced as proving the existence of urea in the liquor amnii of the human female; but, with Berzelius and Raspail, we think their accuracy on this point may be fairly called in question, as it would appear they were content to infer the nature of the saline product solely from its physical characters. After describing the mode of analysis pursued by them, Berzelius writes: " La decouverte de l'urée dans ce liquide serait incontestablement un fait trés remarkable; mais les auteurs n'ont pas indiqué une seule reaction qui preuve que ces cristaux n'etaient point un depot de nitrate alcaline produit aux depens d'un lactate decomposé, semblable à celui qu'on obtient des liquides de la viande"(*a*). Raspail also, upon the same experiments, thus comments: " Fromhertz et Gugert disent y avoir trouvé une matière salivaire, sans doubte parce qu'ils ont pensé que l'embryon crachait dans la liquide; puis de l'acide benzoique et de l'urée, decouverte qui preuverait que l'embryon humain urine dans la capacité de l'amnios. Mais la premier assertion est une hypothuse et peut être la seconde est une erreur. Il serait possible que l'urée et l'acide benzoique des auteurs ne fussent que des produits illusoires de l'operation"(*b*). We have already seen that Drs. Prout and Bostock failed to detect any urea or uric acid in the specimen of liquor amnii furnished them by Dr. R. Lee; but then it must be remembered that the patient this was taken from was only six months advanced in pregnancy, which circumstance tends to lessen the value of the negative result obtained. Voigt looked for urea in vain; but then it does not seem that he examined the amniotic fluid later than the sixth month of pregnancy(*c*). Mack operated, and apparently with much care, upon three specimens from women at the full time, but could not find it, and suggests that the discrepancies in the results of other chemists may be owing to their having examined the fluid mixed with blood mucus, or urine from

(*a*) *Traité de Chimie,* tom. vii. p. 566.

(*b*) *Nouveau Système de Chimie Organique.*   Paris, 1838.

(*c*) Simon's Animal Chemistry, edit. of Sydenham Society, vol. ii. p. 360.

the mother's bladder(*a*).   Colberg gives two analyses of human liquor amnii, one contained no urea, and the other only 0·5 in the 1017·7 parts(*b*). In the liquor amnii of a mare, which Voigt examined, he found no urea, nor could Prout or Lessaigne detect its presence in the amniotic fluid of cows(*c*).

So far then the weight of evidence is decidedly *against* the presence of urea in this secretion. On the other hand Dr. Rees has published the results of four analyses of human liquor amnii, in each of which he states that urea was found. " Urea," he adds, " was proved to exist in the liquor amnii by its characteristic crystallization with nitric acid, and the reactions of its nitrate. A further evidence was obtained in the analysis of specimen 3, by the crystallization of chloride of sodium in octohedra, from the alcoholic extract, when allowed to evaporate spontaneously"(*d*).   Three of the women from whom his specimens were taken were seven and a half months gone with the child, and the other " appeared to be at about the seventh or eighth month of utero-gestation."

Being desirous to throw, if possible, further light upon this disputed question, I obtained some specimens of pure liquor amnii, from women at the full term, and submitted them for analysis to Dr. William Moore, of this city, whose zeal and success in the cultivation of this department of chemistry pointed him out as a most fit person to conduct these examinations.   It may be well to premise that in every instance the strictest precautions were employed to procure the amniotic liquor as free from any extraneous matter as possible, and in no case was there a specimen used of whose perfect purity any doubt could be entertained.   I shall now give the detailed account of the experiments, in Dr. Moore's own words:

(*a*) Simon's Animal Chemistry, vol. ii. p. 361.

(*b*) Ibid. p. 451.

(*c*) Perhaps the existence of the allantois may account for the absence of urea in the liquor amnii of these animals.

(*d*) Guy's Hospital Reports, vol. iii. p. 396.

" Specimen 1.—About three ounces, furnished to me August 18, 1848. It was found to be faintly alkaline; specific gravity 1·006. Under the microscope it presented numerous oil globules and much epithelium. Boiling separated a large quantity of albumen; the filtered liquor was slowly evaporated on a sand-bath, some dilute nitric acid having been previously added; on cooling, crystals were obtained, which to a practised eye, however, bore no resemblance to nitrate of urea; heated in the flame of a spirit lamp, they frothed up and became brownish, they then fused without emitting any animal odour, and, when they had cooled, were perfectly white. They were evidently fixed inorganic salts.

" Specimen 2 was treated according to the plan recommended by Fromhertz and Gugert, viz., it was evaporated to the consistence of a syrup, treated with hydrochloric acid, and filtered. Nitric acid was then added, and the whole exposed to the action of a freezing mixture, but no crystals of nitrate of urea were obtained.

" Specimen 3, in quantity about two and a-half ounces, was faintly alkaline; specific gravity, 1·007. It exhibited under the microscope oil globules, blood, and a very large quantity of epithelium. Evaporated slowly on a sand-bath, a membranous pellicle constantly formed, which was from time to time removed. When concentrated it was treated with nitric acid and exposed to cold, but afforded no crystals of nitrate of urea.

" Specimen 4 was examined November 22, 1848. It was highly albuminous, had an alkaline reaction, and its specific gravity was 1·006. Viewed through the microscope it presented a number of fat globules and a large quantity of epithelium. A portion of it, nearly equal to half a pint, was evaporated in a water-bath to the consistence of a syrup; alcohol was then added and the alcoholic solution was filtered and evaporated in the water-bath nearly to dryness; the addition of a few drops of water, and subsequently of a few drops of nitric acid, was now made. The mixture was allowed to

stand all night in a laboratory, the temperature of which at eight o'clock next morning was 45°. No crystallization took place, nor could any be discovered, even with the aid of the microscope.

" Specimen 5. December 1, 1848. Eight ounces of liquor amnii were evaporated in a water bath, to the consistence of a syrup, alcohol was then added, and the alcoholic solution filtered and evaporated in the water bath nearly to dryness; a few drops of water, and afterwards of strong nitric acid, were added; the mixture was exposed in a watch-glass, during the night, to a low temperature: at the end of fourteen hours no trace of nitrate of urea could be discovered with the microscope."

The negative result of these analyses, and of two or three others, the particulars of which we have not thought it necessary to record, surprised us not a little, as, when commencing the investigation, we expected to have been able to discover traces of urea in the amniotic fluid.

III. Here then, it will be perceived, were two classes of facts seemingly in opposition to one another, viz.: first, the undoubted proofs of urine being secreted by the fœtus in considerable quantity before birth; and secondly, the complete absence of urea in the majority of instances where the liquor amnii was subjected to accurate chemical analysis. In order to reconcile these discordant conclusions, it became an object of the utmost importance to ascertain the composition of the fœtal urine, as hitherto observers appeared to have taken it for granted that the renal secretion possessed the same chemical characters during intra-uterine life, as it does after birth. Accordingly this was the next point to which our attention was directed.

Dr. Prout, at the request of Dr. R. Lee, analyzed some of the renal secretion found in Mr. Hay's case. After the separation of the albumen contained in it, he treated it with alcohol: " That menstruum was found to take up a principle strongly acid, and which readily assumed an imperfect crystallized form. I cannot venture" (he says) "to give this principle a

name; it somewhat resembled the acid called amniotic, or rather allantoid, in some of its properties, but differed from it in others.   The alcoholic solution gave at first faint and somewhat doubtful traces of urea; on standing several days these became very distinct.   After the albuminous matter had separated, ammonia produced a deposition of triple phosphate"(*a*). In a case of nearly the same nature communicated to Mr. Howship, by Sir B. Brodie, the urine was examined by Mr. Brande, " who found it to have the other properties of urine, but to have no uric acid in its composition"(*b*).

With the exception of these two, I have not been able to find that any analysis of this fluid has been made.   I again had recourse, therefore, to the services of my friend, Dr. Moore, who, with his usual kindness and promptitude, offered to undertake a series of experiments upon the fœtal urine.   To procure specimens of this, however, was the great difficulty, as infants at birth will not void urine at our bidding, and it did not seem altogether justifiable to have recourse to the catheter in order to obtain it.   The only way, therefore, in which I could accomplish my object was, to remove the contents, if any, of the urinary bladder from still-born children, whenever opportunity afforded for so doing.   Each of the children from whom the specimens were taken, had attained the ninth month of utero-gestation.   I now subjoin the details of Dr. Moore's experiments.

" The first specimen of fœtal urine which I examined was mixed with blood, and was albuminous.   Concentrated and treated with nitric acid, it afforded no urea.   The quantity operated on was only three drachms; not sufficient to take the specific gravity with Newman's bottle.

" No. 2, September 8, 1848.—Was free from blood, but highly albuminous, and exhibited under the microscope much

(*a*) Dr. Lee's paper before quoted.

(*b*) A Practical Treatise on the most important Complaints that affect the Secretion and Excretion of the Urine, p. 376.   London, 1823.

epithelium and numerous mucous granules. Concentrated, filtered, treated with a small quantity of strong nitric acid, and exposed to the action of a freezing mixture, no crystallization took place. The quantity operated on was about half an ounce.

" No. 3, September 28, 1848. Neutral and albuminous. Examined with the microscope, mucous granules with much epithelium and some amorphous matter were observed. During evaporation a membraneous pellicle formed, and afterwards a precipitate was produced by the addition of nitric acid. Having been concentrated, a few drops of strong nitric acid were added; it was then filtered and further evaporated, and exposed to the action of a freezing mixture, but no crystallization took place.

" No 4, October 31, 1848. Urine drawn off with a catheter from the bladder of a still-born child born in a state of incipient putridity. It was highly albuminous, was free from blood, and deposited epithelium and amorphous matters.

" No. 5, October 31, 1848. Urine drawn off this day from a still-born fœtus, which had been very recently alive. The quantity was so small (about a fluid drachm) that I was only able to ascertain that it was highly albuminous.

" Nos. 4 and 5, it will be seen, were drawn off with a catheter, in order to prevent the possible admixture of blood or serum. The former specimens were obtained by exposing the bladder and carefully removing its contents through an incision, but the quantity of albumen present in the specimen which contained blood, was far too great to have been derived from this source.

" No. 6. A very small quantity of urine passed by a male child immediately after birth was found to be highly albuminous.

" November 7, 1848. The urine of a fœtus which perished during labour, owing to prolapse of the umbilical cord, and which had been alive three hours before, was found to be albuminous and to have an acid reaction. A portion measuring

half an ounce was evaporated, and when highly concentrated was treated with nitric acid.   No crystallization ensued.

" Having thus unexpectedly failed in discovering the presence of urea, by acting with nitric acid upon the urine when highly concentrated, I determined to try the method of detecting it by means of alcohol, in order to effect a more complete separation of the albumen before adding the nitric acid, and thereby to render the detection of urea, if present in very minute proportion, more certain. The following specimen having been obtained in much larger quantity than any of the preceding, afforded a good opportunity for carrying out this plan, and of testing the accuracy of the previous results.

" No. 8, November 27, 1848.   An ounce and a half of urine taken this day from the bladder of a fœtus at the full time, which had perished during birth, the face having presented, was found to be acid, and its specific gravity 1·0085.   It was evaporated in a water-bath and during this process a quantity of albumen was coagulated.   When at a high degree of concentration a small portion was removed with a pipette and placed in a watch-glass; to this a few drops of strong nitric acid were added, which produced a fresh coagulation.   At the end of twelve hours no crystallization was visible, nor could any be observed with the aid of the microscope.

" The evaporation of the remaining portion was continued nearly to dryness, when a quantity of strong alcohol was added. To separate some more coagulated albumen, the alcoholic solution was filtered, and again evaporated nearly to dryness, whereupon a few drops of water, and subsequently a few drops of strong nitric acid, were added.   The mixture was allowed to stand all night in a laboratory without a fire, and at the end of twelve hours no crystals could be discovered, either with the naked eye, or with the assistance of a powerful microscope.(a)

(a) Whilst these sheets were going through the press, Dr. Johnson handed me the copy I had sent him from my note-book of an examination made in the year 1838, which I had entirely forgotten till thus reminded of it.   As it di-

"It is stated by very high authority that 'infants secrete scarcely a trace of urea'(*a*), and if this observation refers to the first few weeks of existence, it tends to corroborate and strengthen the results of the above experiments, at least in so far as regards the absence of urea. At a somewhat more advanced period of life the urine does not present any very remarkable difference from that secreted by the adult, as may be seen from the following experiments, which will be found interesting in connexion with this subject.

"No. 1. The urine of a healthy female infant, aged six months, and nourished entirely at the breast, was acid and free from albumen. Specific gravity, 1·007. When concentrated and treated with nitric acid, it formed numerous distinct crystals of nitrate of urea.

"No. 2, October 7, 1848. Urine passed yesterday by a child aged ten months, labouring under dysentery. The food previously to yesterday, consisted of biscuit powder, isinglass, and arrow root. It had got two doses of a mixture of blue pill, mucilage, syrup of orange-peel, and tincture of opium. This urine was found to be acid; specific gravity 1·012; deposited a large quantity of urate of ammonia; contained no albumen; urea was present in small proportion. N. B.—This urine had been passed twenty-four hours before it was examined, the weather being at the time warm. On the 7th October the ther-

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rectly bears on the subject before us, I transcribe the entry as it stands in my note-book : " Examination of fluid found in large quantity (about six ounces) distending the bladder, ureters, and kidneys of a fœtus which died immediately after birth, and in which the urethra was imperforate. I do not find any analogy between it and urine, except that it contains some of the salts found in urine. It appears to be a serous fluid, tinged with the colouring matter of the blood; specific gravity 1·003; contains a considerable quantity of albumen; and has a slight alkaline reaction when concentrated, but not otherwise ; boiled and filtered it affords precipitates with muriate of barytes and nitrate of silver; it is very slightly clouded on the addition of ammonia ; I cannot discover a trace of urea."

(*a*) Sir Robert Kane's Elements of Chemistry, p. 1165.   Dublin, 1841.

mometer stood at 63° in a room where there was no fire, and
to which the sun had not access.

" No. 3, October 9.   Urine of a healthy female infant,
aged six months; spoon-fed, diet consisting of arrow-root, bar-
ley water, milk, &c.   It contained no albumen, was acid, and
the specific gravity was 1·007. When concentrated it afforded,
on the addition of nitric acid, an abundant crystallization of
nitrate of urea.   Here then we have three specimens of urine
from children under a year old, one of whom was nourished
exclusively from the breast, another was fed artificially, and
the third was labouring under disease; and in each instance the
quantity of urea present was pretty considerable, fully propor-
tionate to the specific gravity of the fluid operated upon."

The above experiments are certainly most interesting, but
in point of importance and novelty cannot compare with those
on the fœtal urine, already detailed. The results of these latter
were indeed most unlooked for, and, as far as they go, amply
justify the deduction, that the urine of the child before birth
differs in its chemical constitution from that secreted subse-
quently, in two very remarkable particulars, viz.: first, in con-
taining a large quantity of albumen; and secondly, in being
almost, or altogether, deficient in urea.

The liquor allantoidis of some of the lower animals, the
cow for example, is considered to be the urine of the fœtus;
but although it has several times been the subject of chemical
investigation, urea has not as yet been detected in it, and al-
bumen has always been found present.   This would seem to
give additional confirmation to the results we have obtained
in our examinations of the fœtal urine of the human subject.
According to the views of Liebig, the peculiar substance called
allantoin appears to replace both urea and uric acid in the
urine of the fœtus of brutes(a); it would, therefore, be an in-
teresting subject for further inquiry to ascertain whether this

(a) Simon's Animal Chemistry, vol. i. p. 57.

or some analogous product be present in the urine of the human fœtus.

That there should be this striking dissimilarity in the composition of the urine secreted before and after birth, cannot so much surprise us when we reflect upon the totally altered position, so to speak, in which the living fœtus is placed by the act of parturition. Instead of receiving blood from the mother's system fully elaborated and prepared for the purposes of nutrition, this fluid must henceforward be eliminated within its own body; and accordingly with independent life commence all those vital processes which have for their object the elaboration of the blood, and foremost amongst which must rank digestion and respiration. Now we know that the former of these exercises a marked influence over the secretion of the kidneys; and it is still a question whether nitrogen (a principal constituent of urea) be absorbed by the lungs during respiration. Again, we may safely assume, that nature, who does nothing imperfectly, transmits the blood to the fœtus in a state of the highest purity, and containing no useless compounds or superfluous elements. All these things considered, then, we cannot wonder that the secretion of the kidneys should be found to present such very different characters during *dependent* life, from what it does during *independent* life; but why this difference should consist chiefly in the two points already stated, is a question upon which we do not feel competent to pronounce, but leave it to those whose particular studies and pursuits render them more intimately acquainted with this department of organic chemistry. We feel assured, however, that the results of the foregoing experiments are not mere barren facts, devoid of application or utility, but on the contrary, that they are calculated to throw considerable light upon the source of urea, and also upon the relations between this substance and albumen in the animal economy.

It is most curious and interesting to observe, that there is one morbid condition of the kidneys in the adult,—albuminu-

ria,—in which the urine re-assumes the characters belonging to
it during intra-uterine life, in becoming albuminous, of low
density, and deficient in urea.   In this disease M. Solon has
conceived " that the albumen might be formed by a sort of
conversion, at the expense of the urea; since these substances,
by a slight alteration in the ratio of their elements, pass re-
spectively each into the other"(a).   A similar mode of reason-
ing might, perhaps, apply in the case of the urine of the fœtus,
whose system contains little nitrogen, and where consequently
it would appear more natural for albumen to replace urea as
an excretion.   The following analyses, taken from Turner's
Chemistry, will show the chemical composition of these two
substances.

| UREA. | | ALBUMEN. | |
		GAY LUSSAC AND THENARD.	PROUT.
Carbon,	2 equivalents.	17 equivalents.	15 equivalents.
Nitrogen,	2 ,,	2 ,,	2 ,,
Hydrogen,	4 ,,	13 ,,	14 ,,
Oxygen,	2 ,,	6 ,,	6 ,,

To close this communication without expressing my sincere
thanks to Dr. Moore, and to Dr. Sibthorpe, Assistant at the
Lying-in Hospital, would be an unpardonable omission.   The
truly valuable assistance lent me by the former gentleman, has
already been seen(b); and to the latter I am indebted for most
of the specimens of liquor amnii and fœtal urine, without
which our researches would unavoidably have required a much
greater length of time for their completion.

(a) Watson's Lectures on the Practice of Physic, first edition, vol. ii.
p. 577.

(b) I am happy to be able to state that Dr. Moore is at present engaged
in a series of experiments upon human milk, the results of which, when fully
completed, will be laid before the Profession.

Art. III.—*Observations on some practical Questions in Surgery:*
1. *On the Operation for tying the Subclavian Artery, internal
to the Scaleni Muscles;* 2. *Luxation of the great Toe upon the
Dorsum of its Metatarsal Bone, which presented unexpected
Difficulties in the Attempt at Reduction.* By William Har-
grave, M. B., Professor of Surgery to the Royal College
of Surgeons in Ireland, Surgeon to the City of Dublin
Hospital.

I. ON THE OPERATION FOR TYING THE SUBCLAVIAN ARTERY IN-
TERNAL TO THE SCALENI MUSCLES.

The statistics for securing the right subclavian artery in the
first part of its course, or internal to the scaleni muscles, afford
a melancholy, and almost desponding history of this operation,
as to its ever being successful. Every case on record (ten) of
securing this vessel, has been a failure, whether performed in
Great Britain, in Ireland, in the colonies, or elsewhere ; to all
the same fatal termination—death, and all by the same fatality
—hemorrhage. Are surgeons to abandon this operation in
future (Liston says that it should never be again performed(a))?
or are they, in the spirit which should always actuate those
engaged in our profession, to seek for the causes of failure? If
these can be discovered, a way will then be opened which will
lead with greater certainty to success.

The causes of the failure in this operation appear to me to
be owing to the four following sources: 1st. To the anatomical
position and relations of the vessel. 2nd. To the great dis-
turbance, perhaps destruction, of the nutrition of the artery,
caused by the difficulty of the operation. 3rd. To the tension
of the artery after the ligature is tied. 4th. To the patholo-
gical conditions of the artery itself.

1st. As to the anatomy of the vessel and its relations, in-

(a) Liston's Surg., fourth ed., p. 200.

dependent of the intricacy of the latter, and the consequent difficulty in laying it bare, it differs in one respect from every other artery in the body which is required to be secured in its continuity, namely, after the artery is tied, it can be relaxed by position, which allows of great repose and a certain amount of quiescence, and so removes any strain caused by the ligature; this desideratum cannot be obtained for the subclavian, in consequence of the presence of the clavicle, which offers an insurmountable resistance to relaxing the artery after being secured. Place the extremity in any position, still no relaxation will follow, the consequence of which is that the vessel is kept in a state of tension, in all probability increased by the ligature.

2nd. The disturbance of the nutrition of the artery, perhaps its destruction, by which I indicate the injury inflicted upon its vasa vasorum, and the small quantity of cellular membrane in which it is imbedded; the often tedious proceeding—in many cases inevitable, to expose the artery with security to the important parts in the vicinity of which it is situated, destroying too many of the nutrient vessels, and thus depriving the artery of the sources from which the processes necessary for the effusion of plastic lymph and of adhesion are obtained. It is this injury inflicted upon the nutritious arteries of the vessel, which favours the occurrence of hemorrhage, and prevents the effusion of lymph where the ligature has been applied, which is corroborated by the condition of the vessel after death.

3rd. The increased tension of the artery should be always kept in mind. The effects of this cause are well established in Dr. Hayden's case, " The artery at the site of the ligature was gaping irregularly for three-fourths of its caliber, one-fourth sound and retaining the ligature;" and in Mr. O'Reilly's case " the divided extremities of the artery were patulous, and separated nearly two inches by coagula; their edges were jagged and irregular, and there seemed to have been not the slightest attempt at the reparative process;" the arteria innominata was

sound, and the heart natural. What reparation could have filled an arterial space of two inches?

4th. If the artery is diseased at the place where it is tied, failure is inevitable.

Such seem to me to be the causes which mainly act in rendering the operation, as hitherto performed, unsuccessful; can any of them be obviated? I incline to the opinion that the chief one can, namely, the impediment to a quiescent, if not an absolute state of repose for the artery, the want of which has been already pointed out.

It has been proposed, to facilitate the operation for securing the vessel in question, " to saw the clavicle"(a), which would certainly afford more space for the subsequent dissections; this suggestion is borne out by performing the operation on the dead body: Cruveilhier has also advocated such a practice.

It is this step in the operation which I would again propose, not so much for the facile exposing of the artery, but to allow it to be gently relaxed, after having been secured, the section of the clavicle would allow this to be done by permitting the approximation of the shoulder to the trunk, and so remove any strain or tension that the ligature might cause on the vessel; it would also remain more imbedded in the surrounding cellular membrane, and receive its supply of blood more freely to assist in the sanatory processes consequent on the operation; while the movements of the upper extremity would produce but little, if any, disturbing effects upon the artery.

The mode of conducting the operation I propose would be, after the vessel was exposed and encircled in the ligature, carefully to saw through the clavicle about its middle, having previously guarded the subjacent parts with a spatula. If any alterations followed this step in the relations of the artery they would be of little consequence, it being noosed prior to the section of the bone; no delay or hinderance would then prevent

(a) Vide my Operative Surgery, p. 44.

the tying of the artery. The action of the muscles which draw the shoulder to the trunk, as the subclavius and pectoralis minor should then be aided by position, and the arm retained *in situ* by a bandage.

I have attentively sought for the published opinions on this proposal for sawing the clavicle, and can find but the following: in Velpeau's Operative Surgery he states, " that he can scarcely comprehend the reasons which M. Cruveilhier assigns as being useful to saw this bone, to tie the subclavian artery with more success"(*a*). The work referred to by Velpeau I have never seen, nor can I find it in the library of the Royal College of Surgeons, or in Trinity College.

This proceeding is spoken of in the following words by Dr· Norris, of the Pennsylvanian Hospital, U. S., in a very valuable memoir on the mortality following the tying of the subclavian artery : " In cases of great difficulty of passing the ligature around the artery, it has been proposed by Mr. Hargrave and M. Cruveilhier to saw through or excise a portion of the clavicle,—a procedure, we should suppose, which would greatly tend to increase the difficulty of the operation"(*b*). It is evident from this quotation he refers to the operation for tying the artery in any part of its course. I confess that I am sceptical as to its adding to the " danger of the operation" in any part of its course, while I contend for the practice, especially as to the artery in the first part or its internal third.

The next authority which I can find is that of Dr. Flood, in his truly practical work on the arteries(*c*), who says, in referring to this proposal, after quoting the passage in all its details from my work, " they are entitled to the most serious consideration."   Neither Velpeau nor Dr. Norris states explicitly their objections to this proposition.

Finally, in reference to the propriety of appealing to ope-

(*a*) *Etud. Anatom.* tom. ii. p. 609.
(*b*) American Jour. of Med. Sci., No. xix., New Series.
(*c*) Flood on the Arteries, p. 88.

rative surgery for the relief of aneurism of the subclavian artery, owing to the fatality of securing the vessel in the first third of its course, it has been suggested to " amputate at the shoulder-joint, treating the stump in the ordinary manner, and keeping up steady and properly regulated pressure on the disease"(a).

In the two unsuccessful operations on this vessel, I quote these cases from Dr. Norris's paper, and consider that they were performed external to the scaleni muscles,—one by Sir A. Cooper, the other by Dupuytren. The former abandoned the operation, as he found it impossible to pass the ligature without including some of the brachial plexus; the latter, after an operation of one hour and forty-eight minutes' duration, succeeded, as he thought, in passing the ligature around the subclavian artery from above the clavicle. Pulsation continued in the tumour after the operation, and death took place on the ninth day, when the ligature was found loosely knotted on that portion of the fourth cervical which afterwards becomes the external cutaneous or musculo-spiral nerve. Dupuytren states that it was the most tedious, difficult, and painful operation that he had ever attempted. In these cases, had the clavicle been divided, the one would have been enabled to secure the vessel, the other also to effect this object, and not to mistake and tie a nerve in place of it.

In a medico-ethical consideration, the failure of operations in such hands as I have just quoted may be productive of unpleasant results ; by which I intend to convey that failure by such practitioners might induce some surgeons rashly to undertake hazardous operations, when, if unsuccessful, they might console themselves and reconcile their want of skill by a reference to similar errors in the authorities now mentioned.

The object which should always be kept in view, and one of the fundamental principles of surgery, is to arrange its ope-

(a) Fergusson's Surgery, second edition, p. 441.

rations for their successful performance, not so much for the naturally skilful, but more for those who are not so gifted, who, by pursuing correct indications laid down for them, will be able, with only moderate dexterity, to perform their operations with present safety, and ultimate success to the patient.

II. LUXATION OF THE GREAT TOE OF THE LEFT FOOT ON THE DORSUM OF ITS METATARSAL BONE, WHICH PRESENTED UNEXPECTED DIFFICULTIES IN THE ATTEMPT AT REDUCTION.

Much as has been accomplished of late years by surgeons, both British and foreign, to render perfect our knowledge of the very important and frequent class of accidents termed dislocations, for which correct and accurate information is of such importance to the practitioner, that whatever can elucidate or afford more precise views of their nature and the impediments to their reduction, should induce every one to add his contribution to the profession for that object.   Influenced by these feelings, I am desirous to record the following case, as presenting some peculiarities in the dislocation of the great toe on the dorsum of its metatarsal bone heretofore unnoticed, as far as my inquiries enable me to ascertain.

Charles Pike, a farm labourer, aged 23, was admitted into the City of Dublin Hospital November 27, 1846(*a*), suffering from luxation of the great toe of the left foot upon the dorsal aspect of the corresponding metatarsal bone, and with fracture of the fibula of the same side, a little above the malleolus. The accident was caused by direct violence, he having been thrown from a horse on the kerb-stone of a footway, the horse falling upon him.

Symptoms of the luxation were so evident as to be almost immediately detected ; the riding of the great toe upon the

(*a*) This patient was admitted under Mr. Orr, and transferred to Dr. Williams ; with their consent I publish it, the details of the case having been noted by Mr. T. D. Hargrave, L. R. C. S.

metatarsal bone; the prominence caused by it; the shortening of that section of the foot; not alone apparent, but rendered more so by comparison with the uninjured one; the motions most imperfect, indeed of no account: the plantar aspect of the ball of the toe was fuller than natural.

Reduction of this luxation was attempted by a well-applied lac on the toe, a good purchase being made on it, the foot having been previously well and firmly secured. The extending power was first made in the axis of the luxated bone, pressure, at the same time, being made on the phalangar end of the toe which rested upon its metatarsal bone, and was so prominent as to afford a good fulcrum to act on. After persevering in the attempt for a reasonable time, and no success attending on it, the toe, still extended, was drawn to nearly a right angle with the foot, and pressure applied to its base, the two being then gradually brought to the horizontal position. This attempt also failed; further endeavours at reduction were then abandoned.

After the lapse of a few days reduction was again attempted, this time being aided by tenotomy of the extensor proprius policis pedis and internal tendon of the extensor digitorum brevis, also by the free division of the fibrous tissues on the internal surface of the joint, but no impression whatever was made in effecting it: the attempt was then finally abandoned.

In the interval which elapsed since the last attempt at reduction in December, an abscess formed in the ball of the toe, which burst, leaving a fistulous opening, and a fistula also formed at a corresponding point of the dorsum of the toe, through which latterly a probe could be passed so as to reach the bones, which felt denuded; likewise, when the toe was moved on the metatarsal bone, a grating sensation was felt: *the toe was in the flexed position.*

This patient now came under the care of Dr. Williams, and on February 24 he performed the following operation to remove the articular surfaces of the phalanx and metatarsal

bones: prior to it the patient was submitted to the influence of ether, and continued under its agency till it was completed. An incision was then made parallel to the inner edge of the foot, met by another at right angles, carried transversely outward over the line of the articulation. On dissecting away the integuments, the phalanx was found resting upon the superior and external part of the metatarsal bone, being firmly lodged in the interval between the first and second metatarsals. The capsular ligament did not seem opened on its anterior internal aspect, but a probe, passed into the superior fistulous opening, got into the joint, which was next opened from above.

Condition of the ends of the bones:—a small portion of the cartilage of the head of the metatarsal bone, on its superior aspect, was absorbed, equal to a split pea, without the presence of pus, while that portion of the bone on which the phalanx rested was soft and carious. The articular surface of the phalanx was covered with its cartilage, and appeared healthy; the sesamoid bones were also healthy, and fixed in their natural position. The articulating surface of the phalanx was then removed with a strong-bladed scissors, next the head of the metatarsal bone, including the carious portion already noticed, which, owing to its softness, was easily excised with the same instrument. The parts were then adjusted, the wound cleansed, dressed simply, and the patient carried to his bed.

Nothing worthy of note occurred in the healing of the wound, and, on the 10th of April he was permitted to leave his bed and walk about the ward, supported by crutches, but not to bear upon the toe. On the 7th of May succeeding he was discharged from the hospital in the following condition: he possessed the power of *extension* and of flexion of the toe; he could bear his weight firmly on the posterior part of the foot, but did not venture on the ball of the toe.

I have had many opportunities of hearing of the progress of this very valuable case since he left the hospital, and am in-

formed that he has completely regained the use of his foot and toe, and is fully able to perform all his duties as an active farm servant.

This luxation presents many points of analogy with that of the first phalanx of the thumb on the dorsum of its metacarpal bone. First, as to the anatomical relations, the articulating heads of the metacarpal and tarsal bones are both very large, each possessing a more or less well-formed neck ; each is furnished with two well-marked and fully developed sesamoid bones, into which a number of powerful muscles are inserted. Into the sesamoids of the metatarsal bone, the internal one has attached to it the abductor pollicis pedis and the inner tendon of the flexor brevis pollicis pedis ; the external one has, inserted into it, the external tendon of the flexor brevis, the adductor pollicis pedis, and a portion of the transversus pedis : the lateral ligaments of the articulation are strong and firm, while the capsular one is particularly so on its plantar aspect. The analogy between these two articulations is still carried out in reference to the articulating surface of the first phalanx of the toe, which presents a very superficial cavity, having but a small proportion to that of the corresponding head upon which it moves ; and very strong muscles inserted into it, viz., the internal tendon of the extensor pollicis brevis, and the tendon of the extensor proprius pollicis pedis. On the inferior surface of the last phalanx the tendon of that very powerful muscle, the flexor longus, strengthened by its connexion with the flexor digitorum longus communis is inserted into it, while to the internal surface of the first phalanx the abductor pollicis pedis is attached. Taking the two bones constituting the toe, we have four muscles attached to them, three of which are very powerful,—the proper extensor of the great toe, the long flexor of the great toe, and the abductor.

What was it that opposed the reduction in this case ? Nothing but muscular agency, as already indicated. A sufficient purchase was had by the lac, so carefully applied as would have

enabled the phalanx to be torn from the foot, if required. By tenotomy the extensor tendons were divided, and, I would also say, the abductor pollicis pedis ; still reduction could not be accomplished. As far as muscular opposition was further concerned in this luxation, we must look principally, if not solely, to the long flexor, and its connexion with the flexor longus digitorum pedis, which prevented the removal of the phalanx from the abnormal position into which it was forced by the accident. It may be asked, what would the section of the first-named tendon have effected ?

One pathological fact, of great value, has been derived from this case, namely, the perfect restoration of the extensor muscles to their proper functions over the phalanges of the toes, after what may be considered a double operation,—the first being that of tenotomy,—the second, the excision of a portion of the phalanx of the toe with the head of the metatarsal bone. This reparation took place in a comparatively short period,— three months ; also a healthy false articulation was formed, compensating for the natural one.

If this luxation had been left to the sole efforts of the system, to take its own course, would the results have been as favourable, and so quickly accomplished ? I think not ; as, from the position of the phalanx, lodged upon and between the two internal metatarsal bones, the same kind of deformity would have permanently followed, which is represented as affecting the metacarpo-phalangar articulation of the thumb in a paper by Mr. Adams in the Cyclopædia of Anatomy, obtained from me. What should be the line of practice in such a luxation ? is a question more easily asked than satisfactorily answered. If tenotomy is resorted to, it should include the section of the long flexor of the great toe, and then to attempt the reduction.

I have been able to obtain scarcely any information on this particular accident from any published works : no example in Cooper on Dislocations and Fractures, who, in speaking of dislocation of the toes from the metatarsal bones, says it is a

very uncommon accident. Dupuytren(a) is altogether silent on it. Delpech describes this luxation in the following terms, which I transcribe from his work : he says that " the great toe has been luxated on the first metatarsal bone and carried to its external side, while the soft parts on the internal side of the articulation have been lacerated, from which results a considerable projection of the metatarsal bone and the impossibility to reduce the luxation ; the denuded bone was disarticulated and removed in totality ; the contraction of the muscles drew back the first toe, but not sufficiently far to bring it into contact with the first cuneiform, so much so that this member was useless and without motion, for want of a ' *point d'appui*,' and the too great laxity of the muscles. We think that in a similar case it would be better to make the resection of the denuded metatarsal, and to procure anchylosis with the great toe"(b). This is evidently a compound luxation ; the practice recommended is good, but would fail in effecting anchylosis.

Boyer says the possibility of luxation of the first phalanx of the great toe from the first bone of the metatarsus may be easily conceived. It is not necessary to give here the rules to be followed in such a case ; they consist in reducing the luxation and amputating the great toe, when the state of the soft parts renders it impossible to preserve it(c). Another example of a compound luxation.—Liston mentions a case of a compound luxation of the distal extremity of the metatarsal bone of the great toe, which was broken ; " the broken head of the bone was removed," the patient recovered with the perfect use of his foot(d).

In cases of failure of the reduction of this luxation, " the

(a) Dis. and Surg. of Bones, published by the Sydenham Society.

(b) Delpech, *Precis Elementaire des Maladies réputées Chirurg.*, tom. ii. p. 141.

(c) Boyer on the Bones, translated by Mr. Farrell, vol. ii. p. 205.

(d) Liston's Surgery, p. 137.

projecting end is recommended to be sawn off, and the bone kept in its proper place by a suitable apparatus"(*a*).

From such researches it is evident that the rarity of this accident must be very great, and fully justifies it being brought before the profession.   In cases of difficulty and failure in the reduction, the surgeon will either have to perform tenotomy of all the tendons of the toe, which is a simple and comparatively painless operation, even without an anæsthetic agent: or to perform a more compound one, the section of the projecting end of the bone, and then reduce it, and maintain the parts *in situ* by proper bandaging and apparatus.   From the success attendant upon Liston's case, also from the one now submitted to the profession, perhaps it would be the most satisfactory practice to have immediate recourse to resection of the bone, after the attempts at reduction had failed, and follow up the treatment so as to obtain a false but useful articulation.

ART. IV.—*Report upon the recent Epidemic Fever in Ireland.*

IN the hope of preserving some record of the late disastrous epidemic which devastated this country during the years 1847 and 1848 in particular, the Editor of this Journal addressed a circular to those medical practitioners throughout the kingdom from whom he thought it likely he should obtain the desired information.   The list of questions contained in the circular, together with the accompanying letter, which will be found in the note on the opposite page, will best explain the nature and amount of the information sought for.

To this circular more than seventy answers have been received, being in some instances extensive reports, and in others satisfactory replies of shorter extent.

(*a*) Chelius, translated by South, vol. i. p. 814.

The queries issued may be classed under the eight following heads(a):—1st, those relating to the history and antecedents of the outbreak of the epidemic, including numbers 1 to 12;—2nd, those describing the character and symptoms of the disease, extending from 13 to 20, both inclusive;—3rd, the complications, including numbers 21 to 29;—4th, the mortality and morbid appearances, including 30 to 33;—5th, the duration of the disease, including 34 and 35;—6th, the modifications, extending from 35 to 38 inclusive;—7th, the sequelæ, comprehended in query 39;—and 8th, the treatment, including the numbers from 40 to 44.

(a) The Editor of the Dublin Quarterly Journal of Medical Science presents his compliments to Dr. ———, and begs to solicit his co-operation in bringing out a collective Report on the recent Epidemic Fever of Ireland. With this view he takes the liberty of submitting to him the accompanying list of queries, to each of which, he need hardly observe, separate replies are not expected. They have been merely drawn up as indicating some of the subjects on which information is desired by the profession here, and on the Continent, &c., &c.

1. Has the late epidemic of fever been prevalent in your neighbourhood?

2. What was the state of health of the district previous to the breaking out of the epidemic?

3. What was the date of the commencement of the epidemic?

4. Were those attacked previously in good health or the reverse?

5. What classes in society were chiefly attacked?

6. Did the disease often set in after recovery from the effects of starvation?

7. Did change of diet among the people appear to influence disease?

8. Was the fever frequently preceded by scurvy or purpura?

9. Was there any disease of cattle prevalent at the same time as, or previous to, the epidemic of fever?

10. At what ages were the greatest number attacked?

11. Were males more liable to the disease than females?

12. What was the proportion of cases to the population of the district?

13. Have you evidence as to the disease being contagious?

14. Was there any difference in the symptoms of cases occurring in different classes of society, and, if so, what were these differences?

15. What difference in character was there between cases following starvation, and others not so circumstanced?

To the circulars containing these queries about eighty re-
plies have been already received, including several most valua-
ble and laboured reports ; and from the information thus ob-
tained, the following historical outline of this epidemic fever
has been drawn up. In it we propose to give an account of
the disease as it affected each province, and also each indivi-
dual county. With a single exception it has been uniformly
mentioned in the replies received that the epidemic prevailed
generally throughout the various districts. The solitary ex-
ception has been the district of Warrenpoint and Rostrevor, in

16. At what period did well-marked typhoid symptoms follow the star-
vation state?

17. In what particulars, if any, did this fever differ from former epi-
demics?

18. Were purpuric spots common?

19. Was crisis common?

20. What were the most usual critical phenomena?

21. Did dysentery frequently precede, accompany, or follow fever?

22. What local complications were most frequent, and mention their
comparative frequency?

23. Did relapses occur frequently?

24. What difference was there between the primary and relapsed cases?

25. Did petechiæ ever appear in relapse, when they did not occur in the
primary fever?

26. Please to state any morbid phenomena of the heart which were pre-
sent?

27. Was epistaxis frequent, and at what stage did it generally occur?

28. Was enlargement of the spleen observed in any of the cases, either
during or subsequent to fever?

29. Were bed-sores frequent, and what was their nature?

30. What was the proportionate mortality of the various classes at-
tacked?

31. Was there a greater per centage of mortality among those attended
at their own houses, or in hospitals?

32. Did the towns and densely populated districts in your neighbour-
hood exhibit a greater amount of mortality than the thinly populated rural
districts?

33. Was there anything remarkable in the *post mortem* appearances?

34. What was the usual duration of the disease?

35. What was the usual length of convalescence?

the County Down, from whence Dr. Ross has forwarded to us the following statement:

" In reply to your favour relative to the late epidemic of fever, I am happy to say that it was *not* prevalent in this neighbourhood, so I cannot give you any information on the nature of it, &c. We have very little fever here at any time, and certainly during the last two years not more than usual.

" As a reason for this I may state, first, that here starvation (or indeed, I may say, want) is seldom or never known ; our gentry are numerous, rich, and charitable, and give a great deal of employment to the poor. Secondly, our soil is porous and sandy, so that our roads become perfectly dry one hour after the heaviest rains ; and although our air is frequently charged with pure damp from the clouds, we never have that unhealthy and impure vapour which evaporates from the surface of a retentive soil."

It will be perceived from a perusal of the following pages that from several districts of Ireland where the late epidemic committed fearful ravages, no reports have been received. In many cases we regret to say that this has been caused by the lamentable mortality amongst our professional brethren, who with so much courage devoted their energies, and too often forfeited their lives in the discharge of their arduous duties. This is a subject to which frequent reference has been made in

36. Was there anything remarkable in those primary cases which were subsequently followed by relapse ?

37. Did you observe any remarkable modifications of the symptoms in individuals of the same family placed under similar circumstances ?

38. In members of the same family, who had contracted fever from the same cause, did you observe much diversity of symptoms ?

39. What were the usual sequelæ of the fever ?

40. What treatment did you usually find most serviceable ?

41. Were wine and other stimulants used in the treatment of this fever ?

42. Was bleeding, local or general, resorted to ; and if so, please state what was the result, and in what cases employed ?

43. Was mercury used ; and if so, in what cases, and at what stages ?

44. Was opium employed ; if so, at what time, and in what cases ?

the pages of this Journal, and which we now notice only to account for what might otherwise appear a deficiency in our Report.

We shall now proceed to give the results afforded by a careful tabulation of the various answers we have received, introducing lengthened extracts from the valuable reports, either in the details of counties, or in the summary of the provinces, wherever we consider that our doing so will render the information required more satisfactory. Commencing with the province of Munster, and adopting the classification of the queries already given, we shall take up each county in detail, afterwards give a comparative view of the epidemic as it occurred in each provincial district, and conclude with a general review of the entire subject(*a*).

<div align="center">MUNSTER.</div>

<div align="center">*First Class of Queries.—The Outbreak and Antecedents of the Epidemic.*</div>

Cork.—The report as to the state of health, previous to the outbreak of the epidemic, from all parts of this county, is that it was healthy, except odd cases of diarrhœa in Innishannon(*b*). The date of the commencement was in February, 1847, except in Mitchelstown(*c*), where it began in November, 1846. It attacked equally those in good and bad health, but in some instances, as in Innishannon and in Cove(*d*), many in the best health, while in Mitchelstown the majority had previously suffered from privation. Both the poor and rich appear to have

(*a*) The Editor here begs to express his obligations to his friends Drs. Neligan and Aldridge, for the very great assistance they have kindly given him in drawing up this report. Indeed, without their aid he could not, owing to severe illness, have been able to publish any portion of it in the present Number of the Journal. He also begs to thank his many country friends who have so kindly assisted him in collecting the necessary information. In every instance the authority upon which the Report is founded is given either with the letterpress or as foot-notes to the pages.

(*b*) Dr. Corbet.   (*c*) Dr. Phelan.   (*d*) Dr. Orpen.

been nearly equally affected ; the lower classes in the large towns being chiefly attacked. We have only one locality in which the disease appears to have set in after recovery from the effects of starvation, namely, Bantry(a). The sudden change of diet appeared in some localities to produce diarrhœa and dysentery. Neither purpura nor scurvy appear to have preceded the fever in this country(b). An epizootic disease prevailed amongst cattle, previous to and at the same time as the fever epidemic. Swine are reported to be the animals principally affected in the neighbourhood of Innishannon. The disease appears to have been generally the ordinary pleuro-pneumonia ; but we are expressly told that in the neighbourhood of Bantry cow-pock extensively attacked the black cattle. Young persons appear to have been more liable to the fever than the aged, as it principally attacked individuals between 15 and 35. The average age of those attacked in Cove was 19 ; the range from 3 to 64. In Mitchelstown, from March to July, 1847, males were principally the subjects of the disease ; from July to February, 1848, females were the most numerous ; and from February to July, 1848, males again ; while in the other districts of the county it would seem that males were principally attacked. The proportion of cases to the population was in Cove 1 in 150.

Tipperary.—The disease was very prevalent throughout the county of Tipperary. In the town of Clonmel(c) the average number of cases in the Fever Hospital (75) rose to 518 in June, 1847. In Cloughjordan(d) the fever cases doubled in 1846, and again doubled in 1847. Previous to the outbreak influenza was very general in Nenagh, and measles prevailed in Cloughjordan. The disease commenced in Clonmel in Novem-

(a) Dr. Tisdall.

(b) For the details of the epidemic of scurvy and purpura, we beg to refer our readers to the late Dr. Curran's observations on that subject, published in the Number of this Journal for August, 1847.

(c) Drs. Sargint and Dowesly.   (d) Dr. Purefoy.

ber, 1846, and throughout the rest of the county in Spring,
1847. In Nenagh(*a*) the health of the district was generally
good previously ; but elsewhere people were suffering from
the effects of want of food. In country districts the poorer class
of labourers and the small farmers were those principally affect-
ed. It would appear that the fever often set in after recovery
from the effects of starvation, and the scarcity and sudden alte-
ration of the people's food, manifestly, it is stated, tended to
produce disease. In Nenagh purpura was a frequent antecedent.
Inflammatory diseases prevailed amongst cattle, in some parts
previous to, and in others simultaneously with, the epidemic.
In Cloughjordan young persons and females were more liable
to be attacked with fever; while, in the neighbouring district
of Nenagh, the disease most frequently commenced in the old,
and often spread from them through the other members of
their families.

Limerick.—In the county of Limerick the fever broke out
in April, 1847, the health of the population having been pre-
viously bad; the sickly and the poorest classes were in general
the first affected. The disease very frequently set in after reco-
very from the effects of starvation ; it was not preceded by scurvy
or purpura. Young persons and females were most liable to
the disease : in the district of Bruff(*b*) those from 5 to 25 were
chiefly affected. In the Cappamore(*c*) Fever Hospital, which
was opened the 8th of July, 1847, 1151 cases were admitted
up to the 10th of August, 1848.

Kerry.—The general state of health was good previous to
the breaking out of the epidemic, which commenced in the
beginning of 1847. It first attacked the most destitute class,
although the individuals affected were previously in good ge-
neral health ; spreading from them to other classes in society.
Individuals of all ages were attacked, but males were more
liable to the disease than females. Previously to the outbreak

(*a*) **Dr. Cahalan.**   (*b*) **Dr. Fitzgerald.**   (*c*) **Dr. Arthur.**

of the epidemic a peculiar disease of the feet was common amongst swine.

Clare.—The health of the district had been generally good until the population began to suffer from want of good food, owing to the potato disease, from which period cases of fever were not infrequent in the remote west of the county(*a*); while in the neighbourhood of Limerick and higher up on the bank of the Shannon, those first attacked with the disease were in the enjoyment of good health(*b*). It does not appear that scurvy or purpura preceded the outbreak of fever; but various epizootic affections were prevalent amongst cattle. Generally whole families, of all ages, were attacked, and males were not more liable to the disease than females. In Clonlara the proportion of cases to the population of the district was something about 20 per cent.

For the county of *Waterford* we refer our readers to the reports of Drs. Carroll and Cavet in the summary of this province.

Second Class of Queries.—*The Character and Symptoms of the Disease.*

Cork.—As regards the much-disputed question of contagion, difference of opinion, of course, exists. In this county the replies, in most instances, are conclusive as to the disease possessing this character; but in two reports from the city of Cork it is stated, in one that there is no *satisfactory* instance(*c*), and in the other, that the evidence is doubtful(*d*). Fever appears to have affected differently on the various classes of society; the head having been chiefly affected among the higher orders, while the lower exhibited more the symptoms of debility; but in the neighbourhood of Bantry no difference in this respect was observed. In those cases of fever which followed on starvation the type was, as might be expected, of a low nature, much de-

(*a*) Dr. Tuite. (*b*) Dr. Kidd.
(*c*) Dr. Townsend. (*d*) Drs. Armstong and Flynn.

bility being present from the outset. On this subject Dr. Phe-
lan writes, that they generally assumed the low maculated type,
requiring stimulants from the commencement; while in cases
not so circumstanced the character was more inflammatory,
with chest affections. The typhoid symptoms generally fol-
lowed the starvation state early, the average being about the
fifth day. The only important difference of character between
this fever and former epidemics, noted in the replies from this
county, was the great tendency to relapse. Purpuric spots do
not appear to have been usually common ; out of 747 cases
Dr. Phelan only met with forty-three. Well-marked crisis was
not more frequent than ordinary ; according to some, not as
constant as in previous epidemics. Diaphoresis seems to have
been the most usual critical phenomenon.

Tipperary.—The reports from this county uniformly agree
in containing evidence as to the contagious nature of the dis-
ease. Gastro-enteric complications appear to have been most
common among the lower class, while inflammatory or typhoid
fever, according to Dr. Purefoy's observations, prevailed among
the upper. In those which more immediately followed upon
starvation, exhaustion and dysenteric complications were mani-
fest, typhoid symptoms generally following early on the star-
vation state. The tendency to relapse, and derangement of the
digestive organs, especially frequent diarrhœa, were the chief
characteristic differences between this and previous epidemics.
In the Clonmel Fever Hospital two especial peculiarities were
noticed. " First, the *blue nose*,—the nose of the patient be-
coming first pale and glossy, and then turning rapidly to a
greenish blue, as if going into mortification, or having been
frost-bitten. All these cases, except one, proved fatal. Indeed,"
say our informants, " when we saw this symptom we gave up
all hope, though of course we did not neglect the patient. The
second peculiarity was, that in some few cases the patients ap-
peared on the mending hand, were able to eat a little, talked, and
expressed themselves altogether better, and perhaps in a few

minutes would be found by the nurses *dead*"(*a*). In some parts of the county, purpuric spots are reported to have been common, but in others they were not remarkably so.   In the Clonmel Hospital crisis was not well marked, but in the northern part of the county it is stated to have been very frequent. The most usual critical phenomena were diaphoresis, increased action of the kidneys, diarrhœa or vomiting, and occasionally epistaxis.

Limerick.—The evidences of contagion in this county are stated to have been of a very doubtful character. Gastric symptoms appear to have predominated among the lower classes. In those cases which followed starvation the fever was of a low character, generally accompanied by symptoms of gastro-enteric derangement; while in those not so circumstanced it was of a more inflammatory form. Typhoid symptoms followed the starvation state in from five to eight days. " The difference," says Dr. Arthur, " which I have found to exist between this fever and former epidemics was the shortness of its duration, and its extreme tendency to relapse. In relapsed cases the attack was very mild in its commencement, and seldom lasted longer than from four to six days, whilst the relapsed stage was long—from ten to fourteen days—very severe, attended with great debility and prostration of strength." Purpuric spots were very common in the Cappamore Fever Hospital, but were not met with in the other parts of the county from whence we have received replies.   Crisis was common; perspiration, deafness, and epistaxis near the termination of the disease, were the most usual critical phenomena ; but in many cases there was no well-marked crisis.

Kerry.—The evidence from this county is in favour of the contagious nature of the disease. According to Dr. Crumpe's report, when the fever directly followed starvation, the symptoms appear to have been mild, convalescence generally setting in in a very few days.   In Tralee the chief difference noticed

(*a*) Drs. Sargint and Dowesly.

between this and previous epidemics was the prevalence of diarrhœa as a sequela.   Crisis was common, showing itself by sudden abatement of pulse, coolness of skin, clean tongue, and a craving for food.

Clare.—The replies from this county agree as to the disease being contagious.   In the higher orders the fever assumed a worse type, and was more fatal; while in the lower, gastro-intestinal complications were frequent, dysentery usually following the fever.   Dr. Tuite, writing from the extreme west of the county, states that he did not meet with a single case immediately consequent on starvation.   Those cases that occurred in the neighbourhood of Clonlara are reported as having proved decidedly less fatal than others not so circumstanced. The tendency to relapse, and also its shorter duration, was noted here, as elsewhere, as characteristic of the late epidemic. Purpuric spots were rarely observed; crisis was common: Dr. Tuite states that he looked for a particular day, and was rarely deceived.   The most usual critical phenomenon was perspiration.

Third Class of Queries.—Complications.

Cork.—Dysentery chiefly followed, sometimes preceded, but rarely accompanied the fever, except in Bantry, where it was frequent in all stages.   Abdominal and cerebral complications appear to have been most frequently met with, except in Mitchelstown, where the lungs were most generally engaged, and purpura and anasarca frequently appeared.   Relapses were most frequent, but not among the highest classes, in the city of Cork(a), nor among any classes in Innishannon. The symptoms appear to have been more severe in the relapses than in the primary disease, more especially when the latter was slight; and in Cove the relapse was frequently accompanied by diarrhœa and dysentery.   In Mitchelstown, petechiæ frequently appeared in relapse, when they did not occur in the pri-

(a) Dr. Townsend.

mary fever; but this was not remarked elsewhere. No morbid phenomena of the heart are reported as having been present. Epistaxis was rather frequent, except in Cove, where it was only remarked in a single instance. It usually occurred in the first stage, and is remarked by Drs. Armstrong and Flynn as being always a favourable symptom, and sometimes critical. Enlargement of the spleen was not observed in any instance. Bedsores were very infrequent in the county; in the city, where they were rather frequent, they were of the common kind.

Tipperary.—Dysentery most frequently followed, but at some times preceded or accompanied the disease. The digestive organs were almost universally engaged; next to them the lungs, and next the brain; but in Dr. Purefoy's report, he states that there was a remarkable immunity from the two latter. Relapses were very frequent, especially in cases where the primary stage was of short duration. In Roscrea, the disease was chiefly characterized by debility, frequent relapses, diarrhœa, and dysentery(*a*). The stage of relapse was usually much more severe than the primary disease, and, in the Clonmel Fever Hospital, generally accompanied by diarrhœa or dysentery, petechiæ also appearing when they were not present in the primary fever. No morbid phenomena of the heart or spleen were noticed; but Dr. Cahalan observes that " he found Dr. Stokes' suggestion with regard to the action of the heart, as a guide for the use of wine, of great value." Epistaxis was not frequent; when it occurred, it was usually looked upon as a critical phenomenon. Bed-sores very rarely occurred.

Kerry.—Dysentery frequently followed on fever of a light character. Relapses occurred very frequently, and the relapsed stage was characterized by a tendency to diarrhœa. No morbid phenomena of the heart were observed, nor was any enlargement of the spleen noticed. Epistaxis was very rare; and

(*a*) Dr. Kingsley.

bed-sores were only noticed in a few cases, where they assumed the appearance of local sloughing.

Limerick.—Dysentery frequently accompanied or followed the fever, but did not often precede it, except in the neighbourhood of Bruff, where it is said not to have occurred. In some districts, hepatic and gastro-enteric complications were most frequently observed, while in others chest affections were very general. Relapses were very common, in which the disease, according to Dr. Fitzgerald, presented the bilious-remittent character. Petechiæ sometimes appeared in relapse, when they did not occur in the primary fever. The state of the heart does not appear to have been particularly observed. Epistaxis was not common. Dr. Arthur reports that enlargement of the spleen occurred subsequent to, but rarely during fever. Bed-sores were very infrequent.

Clare—In this county dysentery almost invariably followed, and sometimes accompanied, but did not precede the fever. Head symptoms, anasarca, and dysentery were the usual complications. Relapses were very frequent, relapsed cases being usually more tedious, and followed by dropsy or dysenteric affections. Petechiæ rarely appeared in relapses when they did not occur in the primary fever. As regards the heart, Dr. Kidd states that *bruits* indicative of anemia were often heard by him; palpitations were noticed by others. Epistaxis occurred in only a very few instances; and bed-sores were very infrequent. Enlargement of the spleen is stated to have been observed in some few cases.

Fourth Class of Queries,—including the Mortality and Morbid Appearances.

Cork.—In Cove the mortality in the upper and middle classes was about one in every fifty cases; in Mitchelstown, three per cent. in the lower, and about six in the higher classes. In Innishannon, the mortality amongst the higher and middle classes was very much greater than amongst the poor, in

the ratio of about 16 to 1. We have no account of the proportionate mortality in the various classes attacked in the city of Cork. In most districts, it was greater among those treated in their own houses than in hospital, but in some places hospitals exhibited a larger proportion of deaths. In towns and densely populated districts, the deaths were more numerous than in the thinly-populated country parts; "but some of the thinly-peopled mountain districts had suffered fearfully before hospital accommodation was provided for them"(*a*). *Post mortem* examinations were exceedingly rare in this part of the country. Dr. Orpen, of Cove, met with congestion of the brain and ulceration of the bowels in those cases which he examined.

Tipperary.—In this county, except in Clonmel, the report states that the mortality was higher amongst the destitute poor; in Nenagh amounting to one in nine in that class, while it was only one in twenty-five amongst the better. The mortality was greater among the poor, when treated in their own cabins, than in hospitals. The mortality does not seem to have been generally greater in the towns and densely-populated districts than in the thinly-populated tracts of country. *Post mortem* examinations were allowed in only very few places. In Cloughjordan, all cases examined exhibited traces of gastro-intestinal irritation. Dr. Purefoy, of that place, writes as follows:

" Stomach.—In the subjects examined the lining membrane of the stomach was generally pale, and softer than in the healthy state. Occasionally a few vascular spots appeared in the lesser curvature, and towards the pyloric orifice, and in a few cases there were found distinct traces of subacute inflammation of the gastric mucous membrane. In some cases of consecutive purpura ecchymosed spots of this membrane existed, exactly similar to those found upon the skin, appearing either in the stomach alone, or throughout the intestinal mucous membrane. The

(*a*) Dr. Phelan, Mitchelstown.

lining membrane of the stomach was in many instances tinged
by a bright orange-coloured bile, which apparently regurgi-
tated from the duodenum. Rarely the contained fluid was
found to be of a dark blackish colour.

" Liver.—The liver was seldom found seriously diseased;
congestion, or slight softening of structure, were the morbid
states most frequently observed; but in one case of confirmed
drunken habit this organ was extremely atrophied, being re-
duced to about the size of a man's fist; its structure so soft and
friable as to be readily reduced to a pulp under the fingers,
whilst the gall-bladder was so reduced in size as to be little
larger than the top of the thumb, scarcely raised above the
surface of the liver, and containing merely a few drops of deep
orange-red-coloured fluid. This patient died of dysentery.

" Intestines.— A great portion of the mucous membrane of the
small intestines was thickly coated by a bright orange-coloured
secretion of stained mucus, which was most abundant in the
duodenum. In this portion of the intestine either inflammatory
congestion or acute vascularity very frequently existed, being
most remarkable in the folds of mucous membrane which co-
vered the valvulæ conniventes, these folds appearing as so many
deep red-coloured lines passed around the inner surface of the
duodenum. Inflammation or congestion of the mucous mem-
brane was of frequent occurrence in the lower third of the ileum,
but ulceration was rarely found, except in cases of dysentery,
and then the ulcerations were chiefly seated in the mucous mem-
brane of the rectum. In protracted cases of dysentery this
membrane has been found literally honeycombed by an innu-
merable number of ulcers, many being very minute, and a few
as large as a four-penny piece, and so deep in some instances as
to have completely laid bare the serous covering of the bowel.
When diarrhœa of long continuance has terminated fatally, the
whole tract of the intestines has been found unusually pale,
thin, and attenuated. Peritonitis, or effusions of serum or
lymph into the abdominal cavity, were not observed.

" As the history, symptoms, and progress of the disease, taken in connexion with the *post mortem* appearances, proved that the abdominal viscera were the parts essentially engaged in the disease, the other cavities of the body were not examined "

Limerick.—In this county the mortality appears generally to have been very small, but was greater amongst the rich in some districts. Generally speaking, the deaths were more numerous among the cases treated in hospital, but in some parts, where the patients remained in their own houses, the mortality was greater. The mortality was always much higher in the densely-populated districts than where the population was thinly scattered over the country. There were no *post mortem* examinations made that we know of.

Kerry.—The mortality was great in all parts of this county, both in the densely and also in the thinly populated parts of it. Dr. Crumpe states that the only remarkable *post mortem* appearance he saw was minute aphthous ulcers of the bowels.

Clare.—In the west of this county, at one period the lower orders suffered most, but in the neighbourhood of Clonlara, and also in Ennis, the mortality was greater in the higher classes It seems, also, to have been much less amongst those attended in their own houses than those treated in hospitals. Towns and densely-populated districts exhibited the greatest amount of mortality. There were no *post mortem* examinations recorded in our returns from this district.

Fifth, sixth, and seventh Class of Queries,—relating to the Duration of the Disease, Modifications, and Sequelæ.

Cork.—The duration of the disease varied from eight or ten days, or less when relapse occurred, to about three weeks. Convalescence was generally protracted, sometimes lasting for many weeks. In Cove, however, the duration was from a week to ten or twelve days. Nothing remarkable has been noticed in any of the reports as regards the primary fever, which was

subsequently followed by relapse, except from Mitchelstown, whence Dr. Phelan writes: "That when the primary case was slight, the relapse was severe and continued; and *vice versa*, when the primary was severe, the relapse was slight, and not near so frequent." No remarkable modifications of the symptoms were observed in individuals of the same family, placed under similar circumstances, nor any diversity of symptoms in members of the same family, when fever was contracted from the same cause. But Dr. Orpen, of Cove, states that children were more liable to bronchial affections than their parents. In the city of Cork, " erysipelas of the head and face, rheumatism, and abscesses with extensive formation of matter burrowing over the cartilages of the ribs, pointing over the sternum generally with many openings, and not at all amenable to treatment"(a), were the usual sequelæ. Gastric derangements, dysentery, and anasarca both local and general, were more frequently met with in the country districts.

Tipperary.—The usual duration of the disease in this county was from one to three weeks, and the convalescence generally lasted from fourteen to twenty-one days; occasionally only five days. Those primary cases that were followed by relapse were usually milder than others. Dr. Cahalan remarks that those primary cases in which gastro-enterite or enteritis was present, required more watching to prevent a relapse. No modifications of the symptoms in individuals of the same family, similarly placed, were noticed, except by Dr. Purefoy, who constantly observed such. According to his return, members of the same family, who contracted fever from the same cause, often presented much diversity of symptoms, especially in the local complications. The most usual sequelæ were dysentery or diarrhœa, anasarca, and rheumatic pains. " The dysentery was often fatal in convalescence"(b).

(a) Drs. Armstrong and Flynn.   (b) Dr. Kingsley, Roscrea.

Limerick.—The usual duration of the disease was from a fortnight to three weeks, and convalescence was generally protracted. Those primary cases which were subsequently followed by relapse were usually mild, and of short duration, " and presented more of the bilious remittent character"(*a*). In some instances the symptoms were different in members of the same family who contracted fever from the same cause. Dysentery and great debility were the usual sequelæ.

Kerry.—In this county no peculiarity is stated with respect to the duration of the disease or the length of convalescence. Those primary cases which were subsequently followed by relapse generally lasted only for a very few days, and the patients were affected with a craving for food amounting to *bulimia*(*b*). Great debility generally followed recovery from the disease.

Clare.—The average duration of the fever was about fifteen days; sometimes extending to three weeks. The period of convalescence varied from a fortnight to six weeks. Those individuals in whom relapse occurred were generally badly fed; " of dirty habits"(*c*); and, according to one return, " remained too long in hospital exposed to contagion"(*d*). " Female members of the same family, though they had contracted fever from the same cause, generally suffered less than males." Anasarca, dysentery or diarrhœa, and general debility, were the usual sequelæ.

Eighth Class of Queries,—referring to the Treatment.

Cork.—The general result of our inquiries, under this head, show that a sthenic plan of treatment was adopted, depleting remedies of any sort not being admissible. In the early stage of the disease mild alterative aperients and diaphoretics were occasionally used, but in general very little medicine seems to have been employed. Dr. Corbet, of Inishannon, states that

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(*a*) Dr. Fitzgerald, Bruff.   (*b*) Dr. Crumpe, Tralee.
(*c*) Dr. Tuite, Kilkee.   (*d*) Dr. Kidd, Clonlara.

he placed most reliance "*in tepid sponging, judicious nourish-ment, and good nursetenders above all.*" Wine and other stimu-lants were *largely* and very generally used. Bleeding, either general or local, was very rarely resorted to; the former in not more than one or two instances ; the latter occasionally with good effect in local congestions ; but Dr. Townsend, of Cork, states that, in his practice, " moderate local bleeding was almost invariably called for from the beginning." Mercury was sometimes used as an alterative, or with chalk and Dover's Powder to check diarrhœa, but never with the intention of producing its specific action. Towards the termination of the disease opium was given when watchfulness or diarrhœa pre-vailed, and with advantage.

Tipperary.—The stimulant plan of treatment was freely adopted in Clonmel, and with excellent effect. Elsewhere in the county a mild alterative plan was generally found more service-able. Wine and other stimulants were generally used. General bleeding was seldom employed, except by Dr. Purefoy, from whose lengthened report we quote as follows : "Bleeding, either local or general, but especially the latter, I have always found to be one of the most efficient and valuable remedies employed in the treatment of fever. During the spring and summer months of the years 1847, when the epidemic had not been of many months' continuance in my district, bleeding was em-ployed in about ten per cent. of the patients admitted to hos-pital, and with decidedly good effects. The general indica-tions were, fever with inflammatory symptoms in its early stage ; the disease occurring in young and healthy subjects ; the pulse being full, frequent, and of good strength. However, as the season advanced, and the disease continued to spread, these indications became less frequent, so that during the win-ter of 1847, and the first eight months of 1848, venesection has not been employed in one case in a hundred. Local bleeding has been used occasionally for the relief of urgent symptoms of

the head or chest." Mercurials were used with advantage, but not to produce their specific effect. Opium was chiefly employed in diarrhœa and dysentery.

Limerick.—Mild alterative treatment seems to have been generally used with advantage in the treatment of the fever in this county. Dr. Fitzgerald generally commenced with the administration of gentle emetics. Wine and other stimulants were very much used. Dr. Arthur used general bleeding in a few plethoric cases, seemingly with good effect, but states that, from his experience, he placed no confidence in depletion in the present epidemic. Local bleeding by leeches was the only form of depletion employed in the Bruff Fever Hospital, and that only in some few instances. Mercury was only used as an alterative. Opium was employed with benefit, especially when a tendency to diarrhœa existed.

Kerry.—An expectant plan of treatment, with especial attention to diet, was used in this county in the treatment of the epidemic. Wine and broth were early employed, and found most serviceable. General bleeding does not appear to have been employed, and only leeching to the head, when the brain was much engaged. Opium and mercury combined were found of advantage when diarrhœa or dysentery followed fever.

Clare.—From the returns we learn that in this county also but little faith was placed in medicine in the treatment of the epidemic. Wine, broth, and other nourishment, with good ventilation, were chiefly depended on. Preparations of mercury were only used as alteratives, and opium very seldom employed, except where diarrhœa or dysentery prevailed.

Summary of Reports not employed in the foregoing Extracts.

Dr. Burke, of Kilfinane, a small town in the south-east of the county of Limerick, has afforded us the following report:

" From the 1st of August to the 27th of October, 1847, I admitted ninety-seven patients labouring under fever; the greatest number of admissions in one week being sixteen. Five died in

the hospital during that time; of these, however, only one died of the simple epidemic, the complications in the other fatal cases being as follows: The first had been long labouring under chronic bronchitis, from the effects of which he died on the fourth day of his admission. The second had all the symptoms of malignant typhus when she came to hospital, and died of that disease three days after she was admitted. The third person was a woman aged 46, of broken-down constitution, affected with recto-vaginal fistula, dysentery, and ulceration of the genital organs. The fourth died of severe pneumonia, the consequence of cold caught by imprudent exposure when he was perfectly convalescent and walking about. The fifth died of the epidemic in a pure uncomplicated form; he lived eight days after admission, and during almost the whole of that period he was bathed in profuse perspiration. Stimulants were unavailing to control the disease, although early and liberally applied. He gradually sank, and died perfectly sensible up to within three hours of his death."

Dr. Burke has here supplied us with a table showing the number of days each person spent in hospital, together with the ages and sexes of the patients, from which we learn that the average number of days spent by each patient was about thirty; and of ninety-seven patients, fifty-three males and forty-four females, the ages were as follows:—Under ten, 9; from nine to twenty, 45 ; from twenty to forty, 26; and over that age, 17. Of this number eight had been ill but one day before admission ; twenty-eight, ten days ; twenty-eight, three days ; twenty-three, four days; five, from five to six days ; and five, from seven to fifteen days. He then continues,—

" The great liability to relapse in the present epidemic must, I am sure, have struck every practitioner who has had an opportunity of observing its progress. Probably, the difficulty of complete separation of the convalescents from those in whom the disease was in full vigour, owing to the necessarily hurried and imperfect nature of the hospital accommoda-

tion, may have had some influence in causing such to be the case. I observed that those who got over their first attack most rapidly, and with least suffering, were invariably the persons most liable to relapse. Of my ninety-seven patients, twenty-eight relapsed; and of these twenty-eight, five underwent a third attack of the disease. Four of the entire number, after having been dismissed cured, were re-admitted at various intervals after going away ; and I found in each of the four cases that the second invasion of the disease was more severe than the first attack. Besides the ordinary familiar symptoms of the disease,—the shivering, the headach, the pains in the back and bones, the pulse ranging from 90 to 100, and the white, thickly-coated tongue,—I found in several of the cases a considerable degree of epigastric tenderness, and a feeling of fulness and loathing about the stomach, which led several to beg I would give them an emetic, at all times a favourite remedy with the country folk. The thirst I always found a prominent and distressing symptom. In twelve cases I saw nasal hemorrhage to some extent, and in ten rather smart diarrhœa. Whenever there was a well-marked critical period, which did not occur very frequently, sweating was its most prominent attendant. Four of the cases assumed well-marked typhoid symptoms during the progress of the disease.

" In no one case did I find it necessary to bleed, and very few indeed bore even the moderate exhibition of tartar emetic, unless given with great caution. Mercury I thought in any shape decidedly injurious. The best purgative I found to be castor oil, and latterly I administered none other. I found the diarrhœa very amenable to the preparations of kino and catechu, and these I did not administer unless the symptoms seemed inclined to become obstinate. The pain of head yielded to simple cold water and vinegar; and I found blistering the best remedy for the epigastric tenderness. In the very great majority of the cases under my care, it was necessary to begin the use of nourishment and stimuli at a very early pe-

riod. I found a valuable adjunct in the decoction of polygala senega and carbonate of ammonia, when the bronchial tubes became engaged in the progress of the disease."

In the city of Limerick Dr. Griffin says, that " the disease was at its maximum intensity in April, 1847; that relapses were very frequent; that, in the commencement of the epidemic, the fever was of a mild character; but towards its termination it assumed a typhus type. Diarrhœa and dysentery were very frequent complications, and, in local determinations, bleeding and cupping were attended with the best effects."

In addition to the information already given under the various headings of the county Kerry, Dr. Crumpe has forwarded us the following report upon the peculiarities which the fever exhibited in the Gaol of Tralee. " Circumstanced as our gaol is, built on a flat from which there is no fall, and the hospital small and ill ventilated, the sewers and necessaries become quickly choked up. The crowds of poor, starved wretches, hurried in droves to gaol for some petty thefts, generally perpetrated for the purpose of being committed to gaol to be saved from death by starvation, were quickly taken off by death from disease. These also quickly fell victims to fever, and from them it spread among the healthy classes in the gaol, who heretofore enjoyed good health, and never suffered from starvation. The hospital soon became over-crowded, though my call for more accommodation was urgent long before it was attended to.

" In this horrid den those labouring under local disease, those ill from fever, those dying, and the dead from fever and dysentery, were promiscuously stretched together. So insufferable was the atmosphere of the place, so morbidly fetid and laden with noxious miasma, notwithstanding constant fumigation with chloride of lime, that on the door being opened I was uniformly seized, on entering, with most violent retching; and it is singular that I should be so affected, who dissected so much, have opened so many bodies, performed so

many operations, and see often such forms of loathsome disease: yet the fact is so. Such was the polluted and contagious state of the air, that the nursetenders were quickly attacked, and some died. In this place my visits were as short and hurried as could be; I was forcibly driven back by the smell. The mortality was enormous, deaths often taking place a few hours after admission; but this occurred in the most exhausted and worn-down subjects. A few cases were seized with vomiting, throwing up large quantities of black stuff from the stomach; some few were jaundiced all over. But, generally speaking, the form was mild, commencing with chills and wearisomeness, followed by heat of surface, slight headach, quick pulse, white tongue, and loathing of food. By confinement to bed, and simple drinks, these symptoms subsided, in a very few days, sometimes from three to five, often without any medicine, being succeeded by a ravenous appetite, which it was most difficult to regulate and control. Relapses and re-relapses were most frequent; diarrhœa generally setting in, which no medicine or treatment could check. Had these cases occurred among previously healthy, well-fed subjects, in private life, where proper ventilation could be preserved, and airy apartments procured, recoveries would be more frequent. Many of the gaol guards were attacked; none of these died in gaol; they were well fed, and had better apartments.

" In the female department cases of fever and dysentery were comparatively few, more cleanliness of person being enforced among them, and they were not so crowded together.

" So foul was the atmosphere, so cadaverous was the smell, that I could not make *post mortem* examinations, nor was there any accommodation to do so, though the bodies were numerous, and often no claimants for them. From one *post mortem* which I saw in the military barrack, and from the symptoms and appearances,—slight, minute ulcers on the mucous coat of intestines,—I am convinced the same appearance would be found in all those fatal cases where diarrhœa succeeded fever. Strong,

healthy, robust persons, with local disease, who would insist on going to hospital *contrary to all advice*, were quickly attacked by the same fever which their fellow-patients had, and soon fell victims. I do not know any circumstance which is a stronger proof of the contagiousness of the disease than the nursetenders being attacked."

The annexed quotations are from the extended report of Dr. Cullinan, of Ennis.

" The epidemic fever which has lately desolated this country has prevailed extensively in this neighbourhood, and I regret to add that it continues still (November, 1848), in many places, but little abated in its extent or virulence.

" It appeared rather suddenly at the end of the year 1846, and, with a steady and regular progression, attained its greatest intensity in a period of about six months, and then gradually declined up to the early part of the present year (1848), when its progress was again marked by a very evident increase. The number of admissions into the County Clare Fever Hospital, in November, 1846, was only ninety-three; it rose to 224 in December, and in the following June it amounted to 757, its maximum in any single month. The admissions fell by a steady and rather regular rate to 210, in February, 1848, and again, by a rapidly progressive increase, attained to 705 in the following May.

" Before the occurrence of the epidemic fever the sanitary state of the district was decidedly below par. Scorbutic diseases obtained widely among the poor, and the public mind generally was greatly depressed. The scurvy had followed in the train of the *epiphytic*(a) by which the potato had been attacked, and, I believe, was partly caused by an absolute

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(a) " There is obviously a defect in our nomenclature which should be supplied. *Epiphytic* (επι and φυτον) is the analogue of *epidemic* and *epizootic*, and is now equally useful and necessary as the germane generic terms. Indeed the term *epidemic* is sometimes applied to the disease affecting the potato, but it is obviously a misnomer."

deficiency of food, and in a great degree, also, by the sameness and bad quality of the food substituted for the potato, together with the exposure to cold and wet, to which the peasantry were subjected in an unusual degree.

" The epidemic affected chiefly the peasantry and the poor, which recently have become nearly convertible terms. Very many clergymen, physicians, and gentlemen connected with relief committees and the administration of the poor law, have been also attacked; but generally the other classes of the gentry have enjoyed, comparatively, a great immunity from fever.

" The average mortality in the County Clare Fever Hospital, for ten years preceding the epidemic, was, I think, 1 in $13\frac{3}{4}$, or about seven per cent. in round numbers; in 1846, the mortality was 1 in $12\frac{1}{2}$; in 1847, 1 in $5\frac{3}{4}$; and in 1848 (up to the present), 1 in $5\frac{1}{2}$. I think that the mortality was much *less* in those attended in their houses than in hospital. Among the clergy, physicians, and other gentry, the mortality was about twenty-five per cent, as far as I can judge by my own experience. I may observe, generally, that the poor, before the access of fever, were suffering from the effects of bad diet, and other privations; and that the gentry who were attacked were depressed by excessive bodily fatigue and great mental anxiety.

" With regard to the question of contagion I feel rather disinclined to express my opinion, as the views which I entertain are different from those advanced by the highest authorities in the profession. I find it difficult to convince myself by fair logical proofs that the spread of fever has been materially influenced by contagion. We have here a special disease, which is frequently generated *de novo*, and can, at any time, be produced by several causes, operating singly or concurrently; and it requires strong positive evidence, such as has but rarely fallen under my observation, to satisfy me that any special case of fever has its origin in contagion. On the other hand, the negative evidence, the evidence against the influence

of contagion to any considerable extent, is very full, and as convincing as such evidence can ever be considered. I can state as a fact, that, during the prevalence of this epidemic, I have seen over thirty of the gentry attacked with severe typhus fever and in no case has a second member of the family become affected, although in no instance was there a system of separation or seclusion resorted to. On the contrary, in every one of those cases, different members of the several families were the most constant and indefatigable attendants of the sick. I have in no case seen one of them attacked with fever !

" I think that the food of the peasantry, since the failure of the potato, is not only insufficient in quantity, but that it does not include sufficient variety to supply all the elements of the human body in the quantity and proportions necessary for maintaining health, certain elements being in proportional excess, while others are deficient, and others altogether wanting. I am sensibly persuaded that the effluvium from the body of a person living exclusively on Indian corn differs widely from that of one fed upon potatoes or a mixed diet. I have long been familiar with the odour of the persons and clothes of the rural poor of this country, and I can confidently state that that has been succeeded by something of a different kind and far more offensive. Even in the open air, when passing through a crowd of poor persons congregated at a relief depot or a workhouse door, I can perceive the air sensibly vitiated by the emanations from their bodies; and these effluvia are far more readily cognizable, more offensive, and more sickening, than the sooty and peat-smoke odours of former times. I believe (indeed I suppose no one will deny) that many persons have been attacked with fever from breathing this vitiated and pestilent air (particularly in close and crowded apartments), although no individual in the crowd may be labouring under the disease ; and therefore I am of opinion that this congregating and crowding together has been one of the most effective means of disseminating typhus fever. I have, however, no doubt that most of

the cases of fever which occurred among professional men and gentry may be readily traced to attendance at relief depots and ministration to the wants of the crowded and sometimes sick poor.

" With regard to the character of the fever itself, it was marked with many peculiarities, some of which I will mention. The fever was generally of a low typhoid type ; this, I think, was its uniform character when professional men and other gentlemen were its subjects. In these cases there were always marked symptoms of profound lesion of the brain and nervous system, excessive debility, great want of rest, delirium, subsultus, frequent respiration without pulmonary disease, and, finally, coma. In almost every case of this class there were maculæ, generally of a dark colour. The action of the heart and pulse was feeble ; inflammatory affections of the thoracic and abdominal organs were very rare. The other symptoms were variable. Among the poor there were some cases of the same character as those I have described. Petechiæ were very general— but the most frequent and most fatal complication in this class was dysentery, sometimes preceding, often accompanying, but most frequently following fever. The dysentery was very different from that commonly observed. Its access, for the most part, was quite sudden. A patient apparently convalescent or making favourable progress would have twelve or twenty alvine evacuations in a few hours, consisting of a serous bloody fluid, often without a trace of mucus or fecal matter. This fluid resembled very closely, except in colour, the rice-water evacuations in malignant cholera. Sometimes the redder and more substantial portion would subside, and present the appearance of a dark red, uncoagulated, homogeneous, viscid mass at the bottom of the vessel. The disease was attended with great debility and restlessness, considerable pain, and often tenderness on pressure. It very often terminated in chronic diarrhœa.

" Young persons from 5 to 15 were the most frequently

attacked. I could not observe that the proportion of males and females differed from that which had obtained previously, viz., about fifty-six females and forty-four males in 100.

" Some special and novel facts which seem worthy of record occasionally presented themselves. During the progress of the present epidemic I have noticed for the first time very many cases of tonic spasm, or what Cullen calls "spastic rigidity" of the extensor muscles of the neck occurring in the progress of fever. I presume this state was a symptom of cerebro-spinal arachnitis. I treated them with mercury, local depletion, and counter-irritation, and many of them eventuated favourably. I have at present under my care a young woman, now almost quite free from febrile disease, who, for the last three weeks, has suffered and still suffers from this partial opisthotonos to an extent I never before witnessed.

" There were presented to my observation some remarkable cases of fever, which ran a fatal course in a period of from six to twenty-four hours. They were not cases of cholera of any kind. At first I supposed that their rapid progress was influenced by previous privations, but now I am of opinion that their course and issue were determined by the agency of some potent aerial poison. I remember particularly two such cases, which occurred in the county Clare gaol, where the food was always abundant and wholesome. A young man had eaten his breakfast, and began to complain in two hours afterwards. I found him weak, so that he could not stand without support; his head was giddy, his eyes glassy and without expression, his pupils contracted, and vision dull; his skin was cool ; pulse very weak, almost imperceptible ; the action of the heart rapid and indistinct; secretion of urine scanty; tongue rather clean, but clammy. He was laid in bed, got some wine and chlorate of potash, and had a sinapism applied to his epigastrium. He sank gradually, and died in eight hours. The second patient died in little more than six hours from the time of his first complaining. His symptoms were very simi-

lar to those detailed. The gaol at this time was greatly crowded, and fever and dysentery were very prevalent and fatal among the prisoners.

" During the epidemic, relapses were frequent, and typhoid symptoms were more developed in the second than in the first attack. Many of these cases were remarkable. For example, a person was attacked with symptoms of active fever, and recovered unexpectedly in two or three days; in a few days afterwards he was attacked again with symptoms of a graver kind, with well-marked cerebral derangement, great prostration of strength, and maculæ generally. These cases were always dangerous and often fatal. They were so common as to arrest the notice of the people, who called the first attack the ' *short* sickness.' Such was the case of Dr. Nihil, of Tulla. After an active ephemeral attack he was able to resume the arduous duties of his profession, and in a few days was suddenly struck down with maculated typhus of a most serious character. The case of Dr. Williams, of the Scariff union, was also of this kind. The symptoms of the first attack were very active; his head was shaved, and leeches were applied, and on the following day he was walking about, apparently quite well, and continued so for some days. I predicted to his medical attendant that there would be a relapse in this case; my prediction was verified, and Dr. Williams passed through severe typhus fever.

" During the epidemic, crisis was universal, epistaxis was rare, and I witnessed true purpuric spots only in a few cases. The convalescence was tedious in very many cases.

" With respect to the treatment adopted by me, I have but little to say; it was generally expectant, and, as complications arose, it was suited to the special indications. Mercury was not much employed; it did not seem to exercise any considerable influence on the dysentery, the most frequent complication. General bleeding was but rarely resorted to; I have, however, employed it with advantage in some cases where local inflamma-

tion existed, and also in some other cases without inflammation; and I have not been deterred from doing so by the existence of maculæ. I found it useful in all the cases in which I used it. Local bleeding was frequently employed, for the head chiefly, but not to the extent or with the same benefit as formerly. Opium was used in great quantity, chiefly to relieve diarrhœa and dysentery. I have employed it with excellent effect, combined with acetate of lead, in the treatment of the bloody flux before referred to. I frequently gave sixteen grains of solid opium, with twelve grains of acetate of lead in twenty-four hours, and often without producing sleep, or sensibly alleviating pain. So slight were its effects, that I have sometimes suspected that the opium was not pure: it had, however, been obtained directly from a respectable house in Dublin. Wine and other stimulants were used more liberally than usual, but with much greater reserve, I believe, than is practised in the metropolis. I have employed chlorate of potash freely, and with advantage, as I suppose, where the typhoid type of fever was well marked, and the quality of the blood deteriorated.

"We have at present (November, 1848), 400 patients in the County Clare Fever Hospital, and I fear the epidemic tendency is far from being exhausted.

"With the views I have already expressed, as to the etiology of the epidemic, the proper course for arresting its progress is sufficiently obvious. A better and more varied diet, if possible, should be provided for the poor. Indian corn, on which they must subsist for many months to come, should be carefully analysed, and its elementary composition compared with that of the human body; and those essential elements which are deficient or altogether wanting in Indian corn should be supplied by providing other dietetic articles, specially selected, in which these elements are known to exist; or perhaps, like iron in chlorosis, they may be introduced directly into the system. For instance, let the chemists say whether maize contains nitrogen, sulphur, sodium, phosphorus, &c., or any of them, in sufficient quantity

to supply the wants of the system (regard being had to the general condition and habitudes of the poor), and if so, let them indicate the dietetic articles which may compensate for those deficiences, or let them suggest the most eligible mode of introducing these principles immediately. I could mention many cases of disease in which I have adopted the practice here suggested, and, as I suppose, with advantage."

The following report has been received from Dr. Carroll of Waterford:

" The recent epidemic, which raged with great violence in this city and neighbourhood, commenced in October, 1846. In the early part of that year there was nothing remarkable in the state of the public health, the average number of patients in the hospital not exceeding that of ordinary times. At the period mentioned, however, a gradual increase of admissions was observed, and this continued until the epidemic arrived at its acmé in the summer of 1847, when we had no less than 490 cases together in the hospital and adjoining temporary sheds. I have not the slightest doubt that the fever was highly contagious, indeed I possess undoubted proofs of the fact. A large proportion of the officers of the institution were attacked by it, and I regret to add that several valuable lives were lost, as the following list of deaths will testify: two matrons, two apothecaries, two porters, and one nursetender, besides the physician of the Waterford Dispensary, fell victims to its ravages. I could adduce a vast amount of evidence to the same effect, but the above will suffice.

" The class of persons among whom the disease chiefly prevailed were, at the commencement, the destitute, ill-fed, and ill-clad inhabitants of the lanes and ill-ventilated districts of the city and suburbs; from these it ascended, and more or less pervaded all ranks and classes of society. I cannot state accurately the proportionate mortality which occurred in the respective classes, but I can say in general terms that its fatality increased in the ratio of the rank and respectability of the

individuals attacked; the difference in the symptoms of the disease, as it appeared in the higher and lower classes of society, consisted chiefly in the greater predominance of cerebral complications in the former. In the autumn of 1847 dysentery made its appearance as an epidemic distinct from the fever, though probably owning a similar origin. It presented itself in a very severe form, and was exceedingly fatal. It often attacked our convalescents from fever, and the great majority of those so attacked were carried off.

" The local complications chiefly noticed in this epidemic stood in the following order of frequency: affections of the gastro-intestinal mucous membrane; of the brain; of the lungs and pleura; and erysipelas.

" The greater proportion of those attacked were between the ages of 25 and 45, and females much more frequently than males; the proportion being about five to three. In the great majority of the cases which fell under my observation the usual duration of the disease was from fifteen to twenty-one days: the seventeenth day may be stated as the period at which convalescence was most frequently attained. These cases presented all the features of the ordinary typhus fever of this country, modified in some degree by the previous privations of the sufferers, which caused a much earlier and more profound prostration of strength than I had witnessed in any previous epidemic.

" There was, however, another class of cases quite distinct from these, in character, duration, and the great tendency to relapse by which they were accompanied. In these, fever commenced suddenly, with great violence, and with little premonitory disturbance of the system, and generally terminated on the seventh or ninth day by profuse sweating, which was frequently preceded by rigors. About two-thirds of these cases relapsed. The period of relapse was from the third to the fifth day after convalescence, and there was a singular uniformity in the symptoms which ushered it in. It almost always began

with a rigor which was soon succeeded by vomiting of a greenish yellow fluid, great tenderness in the epigastric and right hypochondriac regions, prostration of strength, and, if the patient was old, or previously enfeebled by disease, collapse and death; if, on the contrary, he was young, and previously healthy, recovery took place on the seventh or ninth day. These cases were never maculated, but sometimes presented purpuric spots; but, in the typhoid cases, maculæ were invariably and extensively present: they generally appeared on the fifth day of the disease in rose-coloured patches, which became darker as the fever advanced.

" I cannot say that crisis was common, except in the seven-day fever, when it invariably occurred by sweating. When it happened in the typhoid cases, it was generally by the supervention of diarrhœa, about the fifteenth day. Profuse perspiration in the latter stages of typhus is a most dangerous symptom, and frequently the harbinger of death. This fact has been noticed by several writers on the disease, and was fully borne out by my experience in the late epidemic.

"Epistaxis was a very frequent occurrence, and often to such an extent as to require the posterior nares to be plugged. It often relieved the head symptoms, and these cases generally did well: the period of its occurrence was between the sixth and tenth day.

" The most frequent sequela of the fever was inflammation and suppuration of the parotid glands, which was the cause of much suffering and protracted convalescence.

" Erysipelas of the head and face was a frequent and formidable complication of the disease, and we were never without a considerable number of cases of it in the wards. It generally made its attack in the latter stage of fever, or during the period of convalescence, terminating in abscesses about the face and scalp.

" With respect to treatment, one leading principle was strictly adhered to in this epidemic, viz., to avoid all heroic remedies

or modes of practice, and to support the strength of the patient from an early period of the disease. As a general rule, very little medicine was prescribed : the bowels were regulated by gentle doses of calomel and rhubarb, or castor oil; but even these were cautiously employed, as there was, in most cases, a tendency to diarrhœa. About the fifth or sixth day, beef-tea was generally added to the ordinary fever diet; and, in many cases, when the patient was weak, a pint of table beer per day was also allowed. This we found a valuable adjunct in supporting the patient's strength, and often superseded the necessity of giving wine or other stimulants. Under this simple treatment, together with attention to ventilation and cleanliness, a large proportion of the ordinary run of cases did well.

" The stimulants used in our hospital were Port wine, and whiskey made into *punch*. In all the heavy cases of typhus these were administered to a greater or less extent; but always with caution, and never in the ' *ad libitum*' manner, which I fear is now too fashionable. I feel satisfied that, beyond a certain reasonable amount, they do no good, but, on the contrary, have a tendency to produce or increase dangerous congestion of the brain. While on this subject, I may observe that I have derived much assistance in their exhibition from Dr. Stokes' valuable researches on the condition of the heart in typhus.

" General bleeding I have never once resorted to in this epidemic, but I found the local abstraction of blood by leeches or cupping an invaluable remedy in many of its complications, particularly in the early stages of the disease. When there was much headach, with heat of scalp and throbbing of the temporal vessels, the application of a few leeches, repeated in relays of small numbers, often acted like a charm, and seemed, in many instances, to cut short the attack, or at least to render its subsequent career extremely mild. I have also leeched the head in a more advanced period, with the view of procuring sleep, as suggested by Dr. Corrigan, and often with the desired result.

" In all local inflammatory complications, whether of the chest or abdomen, local depletion was resorted to whenever the general condition of the patient admitted of it. I, however, observed, that loss of blood, even to a small extent, was in general badly borne after the first week, and even then we had frequently to administer wine at the same time.

" I have not used mercury so as to affect the system in any case of simple essential fever, but, when complicated with pneumonia or pleuritis, I have found it of the highest efficacy in controlling those dangerous affections. Calomel and opium was the form selected in those cases, conjoined with local bleeding or blistering, according to circumstances. In the more acute forms of cerebral irritation it was also administered, combined with antimony, until the gums were affected, and with the best results.

" I have employed opium very frequently in the late epidemic, and on no former occasion have I seen it produce such satisfactory effects. I believe there is no procedure in the treatment of fever which requires so much nice discrimination and judgment on the part of the physician as the exhibition of opium. It is playing a hazardous game. It either saves the patient or fearfully increases his danger. In that species of delirium with sleeplessness, which generally occurs between the eighth and twelfth day, resembling in its character delirium tremens, and which, if unrelieved, will often persist for several days and nights, until the patient dies, a pretty full dose of opium acts like a charm, the patient awaking in the morning perfectly composed and tranquil. There are, however, a large number of doubtful cases where the indications are far from being clear ; here the difficulty exists.

" I have noticed the following symptoms as favourable to its administration :—a pupil *not contracted ;* soft, perspirable skin ; abundant secretion of urine ; and a compressible pulse. The form I have found most advantageous in the majority of cases was *Dover's Powder.*"

Dr. Cavet writes from the same locality :—" I have had the disease twice myself during the year 1848, and out of six months I was attached to the Waterford Fever Hospital, I served only two. The first attack appeared five days after entering on duty at the sheds; but I do not believe it was contracted in them, but in one of the miserable holes I had visited just before. It was attended with yellowness of the skin, hiccup, and vomiting for three days, some of the matters brought up being bluish, and was followed by a short collapse. Recovery was attended by severe neuralgia of the upper extremities.

" The second attack followed in about thirty hours the autopsy of a typhus patient, who had exhibited most marked symptoms of poisoned blood. The skin of my hands was entire at the time, but absorption must have taken place in the left, as the first thing I remember was a large rupia-vesicle at the root of the thumb, and inflammation of the axilla and left side of the thorax, which ended in suppuration.

" This time I had great prostration and furious delirium, and was carried through by the most liberal use of stimulants. Rheumatism followed, and still annoys me in the hands and feet.

" Dr. Thomas Kehoe, Staff Assistant Surgeon, who assisted me in the examination, suffered from similar but milder symptoms."

In addition to the answers to our queries from the Cork district, and which are given in the county details, Dr. Jones Lamprey has just furnished us with the following report of the epidemic as it appeared in the district of Skull and Skibbereen, where both famine and pestilence raged with probably greater fury than in any other part of Ireland :

" Towards the latter end of the month of March, 1847, I was appointed by the Central Board of Health to take charge of the district of East and West Skull, which at that time was suffering under a frightful state of famine, epidemic dysentery, and fever.

" I found the district that was allotted to me very exten-
sive, thickly populated, situated at the extreme south-west
promontory of Ireland, within a short distance of Cape Clear,
and bordered by a sea-coast marked by numerous islands and a
vast variety of natural harbours. The appearance of the coun-
try is exceedingly rocky, and contains several large tracts of
bog. Very few gentlemen's residences were to be seen, but
numerous cabins of the worst description were visible in all
directions, especially along the coast.

" The population, previous to the year 1847, amounted to al-
most 18,000, the great majority of whom were entirely depen-
dent on the local employment of their labour, either as fishermen,
miners, or in the cultivation of the potato; these resources hav-
ing always afforded constant employment, and the rich land
and fisheries yielding a plentiful supply of food.

" It would be difficult to state at what particular date the
epidemics commenced to be prevalent; but, from the general
remarks of the residents, I should say that fever and dysen-
tery were developed towards the latter half of the previous
year (1846), as these diseases showed themselves along with
the decline of the food of the people, and arrived at their
maximum at the time the famine was made complete by the
total failure of that year's harvest crop of potatoes. Disease
then, in company with famine, spread most rapidly, and carried
off numerous victims(*a*), reducing the population so rapidly,
that by the close of that same year 2000 had fallen.

" No particular class was exempt from the prevailing fever
or dysentery, though, perhaps, if there had been any means of

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(*a*) " Frightful and fearful," writes Dr. Traill, February 2, 1847, " is the
havock around me. Our medical friend, Dr. Sweetman, a gentleman of unim-
peachable veracity, informed me yesterday that if he stated the mortality in
my parish (Skull) at an average of thirty-five daily, he would be within the
truth. The children in particular, he remarked, were disappearing with awful
rapidity. And to this I may add the aged, who, with the young,—neglected,
perhaps, amidst the wide-spread destitution,—are almost without exception
swollen and ripening for the grave."

making an exact calculation, the number of cases occurring among the independent were proportionably greater than among the poor. This is to be explained by the habit the poor starving creatures had of crowding around the houses of the better classes, seeking relief, and many of the houses of the gentry being even made depots for administering it, their humane families carrying on the office of distribution. From this circumstance many contracted fever or dysentery, and many excellent individuals have fallen victims to their zeal and extraordinary efforts to alleviate the overwhelming distress with which they were surrounded; foremost among whom may be mentioned the Rev. Dr. Traill, whose philanthropic exertions to relieve the stricken people were only checked by the sacrifice of his devoted life.

" I am not aware of disease being prevalent previous to these epidemics of 1847–48, nor had there been any epidemic among the cattle, though, in fact, I saw but few cows, sheep, or poultry in the whole district, which I found to have arisen from the farmers having disposed of them through fear of their being plundered by the starving people.

" Those persons who were suffering from starvation were usually attacked with a lingering form of fever, ' famine fever,' characterized by great prostration, thirst, a dry, chaffy, hot feel of the skin; a weak, feeble pulse; the intellect generally clear; no cerebral, thoracic, or abdominal complications; nor was it defined by periods, stages, or crisis, and terminated in death from inanition alone. It required no medical treatment for its cure, as recovery took place on administering proper nutriment; it was modified according as the individual was able to procure sustenance or not. In many instances anasarca appeared as a sequela, and persons so affected, especially towards the latter stages, exhaled a peculiar fetid, septic odour. This form of fever was not propagated by contagion, but persons so affected, when brought in contact with the more wealthy and better fed individuals, were capable of imparting fevers of different types.

" Among the several thousands that were suffering from starvation(*a*), it had often struck me how comparatively rare were the ordinary types of fever. This I found afterwards to be explained by the fact that each class was liable to a particular form ; thus the poor had the famine fever; the persons better off had the typhoid and modified typhus; and the mechanic, or the person in a corresponding class of life, accustomed to a better fare than the ordinary labourer, was usually attacked with a typhoid or typhus fever, but not presenting the usual well-marked gradations or stages observable in similar fevers in ordinary times. The convalescence was slow, and very frequently attended with a fatal termination, for want of the necessary nourishment. Again, in the upper and more independent class, the type assumed a new form altogether; here were found the gastro-bilious or jaundice fever, and well-marked typhus; or the former was characterized by commencing with the symptoms of ordinary simple continued fever of rather an aggravated kind, with some threatening of head and abdominal complications, when suddenly a jaundiced tinge of the skin occurred on the fourth or fifth day. The head symptoms increased; black sordes collected about the cheeks and gums; dark, fetid discharges came off from the bowels; and very frequently sudden effusion occurred within the head, causing instantaneous death: or else the case resolved itself, on the fifteenth or twenty-first day, by a critical perspiration. Typhus fever pursued its ordinary course in such cases, and was attended with its usual phenomena and complications.

" Dysentery had been by far more prevalent than fever in this locality. This was owing to the use of the various substitutes for the lost potato. In many cases the people resorted to sea-weeds of different kinds, and to a variety of molluscous animals found along the sea-shore, but more particularly to the

(*a*) " The calculation of our Relief Committee is, that we have at this moment 15,000 persons in a state of destitution."—*Note to Dr. Traill's published letter of 2nd January,* 1847.

use of Indian meal, which they were unaccustomed to, and did not understand how to cook properly; and in many instances they were obliged to eat it raw, for want of firing.

" The dysentery was very chronic, and attended with a great amount of suffering. The patients complained of excessive abdominal pain, painful tenesmus, and great thirst. The dejecta mostly consisted of pure blood and mucus. It was easily known, if any of the inmates in the cabins of the poor were suffering from this disease, as the ground in such places was usually found marked with clots of blood. The cases were most protracted, hopeless ulceration of the intestines always ensuing in spite of every effort to check the disease, except in those cases which were actively met in the outset of the attack by mercurial treatment, the only plan that my subsequent experience has proved to be of any avail. I myself suffered severely from an attack of this disease, and owe my recovery to this plan of treatment alone."

In this province no less than forty-eight medical men died in the year 1847, the great majority from fever(*a*).

<center>ULSTER.</center>

First Class of Queries.—The History and Antecedents of the Epidemic.

Antrim.—The fever was here unusually prevalent. In the towns of Belfast(*b*) and Antrim(*c*) dysentery and diarrhœa prevailed previously to the breaking out of the epidemic. Elsewhere in the county, for example, at Ballycastle(*d*) and at Ballymena(*e*), the general health of the population was previously

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(*a*) See Drs. Cusack and Stokes' Report on the Mortality of Irish Medical Practitioners. Dr. Callanan of Cork,—whose report not having reached us until we were going to press, we are obliged to hold over till our next Number,—states that, in the year 1847, no less than 3329 deaths occurred in the Cork work-house.

(*b*) Dr. Malcolm.   (*c*) Dr. Brown.
(*d*) Dr. O'Connor.   (*e*) Dr. Black.

very good. In the two latter districts, the date of the commencement of the fever was January, 1847. In Belfast it began in May, 1847, and in Antrim in July of the same year. In the large towns most of those who were attacked had been suffering from the effects of starvation, and many were labouring under diarrhœa. " Individuals who were recovering from dysentery were peculiarly susceptible"(a). In the country districts those affected were generally in good health; the poorer classes, and sometimes the middle, were chiefly attacked. Change of diet among the people influenced disease considerably, especially in propagating dysentery; purpura or scurvy is stated to have frequently preceded the fever, in the reports received from Belfast and Ballymena, but not elsewhere in this county. No disease is stated to have been prevalent amongst cattle at the same time as, or antecedent to, the epidemic of fever, except in Ballymena. The greater number of those attacked were young persons, the average age being five-and-twenty. Females, in general, appear to have been more liable to the disease than males. In Belfast the proportion of cases to the population of the district was 16,000 in 110,000, or about one in seven(b): the proportion elsewhere was large.

Derry.—Dysentery prevailed in this county previously to the outbreak of the epidemic, which commenced in the spring months of 1847. It chiefly attacked those in a debilitated state from the effects of privation or bad health. The lower classes were chiefly attacked. No starvation existed in the city of Londonderry(c), and in the county only few instances of fever from its effects are recorded. Dr. Rogan did not meet in his practice with a single case of fever preceded by scurvy or purpura. Pleuro-pneumonia prevailed amongst cattle, both previously to and during the epidemic, in the northern and north-western parts of the county; but Dr. Vesey of Magherafelt states that it was not prevalent in his district.

(a) Dr. Black.   (b) Dr. Malcolm.   (c) Dr. Rogan.

The persons attacked by fever were usually between the ages of 15 and 30. There was no difference in the liability to the disease between males and females. As regards the query, " what was the proportion of cases to the population of districts," Dr. Rogan states " that no data exist to enable him to reply to it."

Donegal.—Dysentery, diarrhœa, and starvation prevailed in this county previously to the outbreak of the epidemic, which did not commence here until the month of November, 1847(*a*). The middle and lower classes were chiefly attacked, those affected being already lowered by general debility or in bad health. The disease often set in after recovery from starvation, but Dr. Little of Letterkenny states that he did not look upon it as an effect. The disease was sometimes preceded by scurvy. Young persons between 12 and 30 were chiefly attacked. Males appeared to be a little more liable to the disease than females, "in the proportion of 8 to 7"(*b*).

Tyrone.—The previous health of the district was good. The epidemic commenced in December, 1846. Those attacked were in ordinary health, but reduced in strength from want of food(*c*). The poor were principally affected, but the disease does not appear to have set in after recovery from the effects of starvation. It was frequently preceded by scurvy or purpura. The ordinary epidemic, pleuro-pneumonia, was prevalent among cattle previously to and at the same time as the epidemic fever. Young persons from 10 to 30 were those chiefly attacked with fever. Of the entire number of admissions into the Omagh Fever Hospital, 530 were females and 284 males. Of these ninety-one were under eleven years of age; 545 were between 11 and 30; sixty-one between 30 and 40 ; and 110 over that

(*a*) Dr. Little, Letterkenny, and Dr. Brady, Gweedore. Dr. M'Cormack of this county was one of the first to record the existence of true scurvy in Ireland. See his communication in the Dublin Hospital Gazette for 15th April, 1846. See also Dr. Curran's paper already alluded to at page 69.

(*b*) Dr. Little.   (*c*) Dr. Hamilton, Omagh.

age.   The whole population of this district is 69,099; so that the proportion of cases to the population was 1 in 85.

Fermanagh.—For the history of the epidemic in this county see the report of Dr. Betty of Lowtherstown in the provincial summary given at page 125.

Cavan.—Dysentery, diarrhœa, and anasarca were very prevalent in this county prior to the breaking out of the epidemic in March, 1847. " A previous state of good health had not much influence in warding off the disease; for although it weighed heavily on the poor, ill-fed portion of the population, whose constitutions were in fact so debilitated as to be unable to resist fever or any other form of disease that might present itself, we have observed it in some of the healthiest portion of the people, persons who were not subjected to privation in any shape, and who at the time of the seizure were in good health"(*a*).   The poor were chiefly attacked, but clergymen and medical men also suffered severely.   " In this county seven medical men died of fever within twelve months, and three had the disease in a very dangerous form, but ultimately recovered"(*a*).   The disease very frequently set in after recovery from starvation. Change of diet did not appear to exercise any perceptible influence on it.   Cases of purpura or scurvy did not occur in immediate connexion with fever, but purpura was frequently observed in this district in 1846.   Pleuro-pneumonia was very prevalent amongst cattle previously to and during the epidemic. Of 1236 cases of fever under the care of Drs. Halpin and Mease, from whom the following statement has been received, 243 were under ten years of age; 442 from 10 to 20; 190 from 20 to 30; 152 from 30 to 40; 112 from 40 to 50; sixty-three from 50 to 60; and thirty-four from 60 upwards.   Of these cases, 578 were males and 658 were females.

" The population of the town of Cavan and one mile round it was, as nearly as we can ascertain, 4736.   The number of

(*a*) Drs. Halpin and Mease, Cavan,

cases was 1236; but of this number 236, or nearly one-sixth, had the disease twice, and ninety had it three times. The number is thus reduced to 915, or nearly one-fifth of the population; but this is not strictly correct, as many cases were brought in from remote country districts"(a).

Monaghan.—See report of Dr. Young at the conclusion of this province.

Armagh.—In the town of Armagh bad dysentery prevailed previously to the outbreak of the epidemic in April, 1847(b); but the county was not particularly unhealthy. In Loughgall the fever commenced in the end of 1846(c). The lower classes were chiefly attacked; the majority of those affected having been previously in bad health. The disease did not often set in after the recovery from the effects of starvation; but Dr. Leeper states that the epidemic materially declined as the poor were better fed. The fever was frequently preceded by scurvy. No epidemic disease was prevalent amongst cattle at the same time, or before the accession of the fever. Individuals at the age of puberty were chiefly attacked; but all ages were liable. Females were more generally affected than males at the first outbreak of the disease.

Down.—The health of this district was indifferent before the epidemic broke out, with the exception of the district of Downpatrick(d). In Newry, dysentery existed as an epidemic during the autumn of 1846, being very fatal among the old and infirm, who, if not carried off, were so debilitated by its effects as to render them an easy prey to the fever which followed(e). The fever prevailed greatly in the neighbourhood of Hillsborough(f),—particularly among the poor weavers,—where it did not appear until about the middle of June, 1847, but elsewhere in the county it appeared early in spring of the same year. Many of those attacked had previously suffered from the ef-

(a) Drs. Halpin and Mease, Cavan.   (b) Dr. Cuming.
(c) Dr. Leeper.   (d) Dr. Brabazon.
(e) Dr. Starkey.   (f) Dr. Croker.

fects of want of food. The epidemic chiefly affected the poor, but the better classes did not escape. Change of diet among the people appeared to influence the disease. In Downpatrick purpura and scurvy frequently preceded the fever. No disease appears to have been noticed as prevalent among cattle at this time. Dr. Croker writes that the greater number of those attacked with fever were from twenty-five to forty years of age, most of whom were females; while Dr. Brabazon states that one-half of his patients were between the ages of 12 and 30, and in the proportion of three females to two males.

Second Class of Queries.—The Character and Symptoms of the Disease.

Antrim.—The evidence as to the contagious nature of the late epidemic of fever is very decided, as reported from this county. In the upper and middle classes, head symptoms predominated, while in the lower classes abdominal complications and general symptoms of debility were chiefly present. Those cases that immediately followed on starvation were specially marked by debility. " The fever also was of a lower type, with great tendency to diarrhœa. Well-marked typhoid symptoms usually followed the starvation state early, the average period being the sixth day"(*a*). " The late epidemic differs from former ones," writes Dr. Malcolm, of Belfast, in the well-marked character of the types, which he describes as follows: "1st. Relapsing synocha—crisis, fifth to eighth day; relapse fifteenth; crisis, third day, with great debility. 2nd. Simple continued; crisis, ninth to twelfth, or more; low typhoid symptoms. 3rd. Typhus; crisis, eleventh to seventeenth day, or more; spotted generally; dry, brown tongue." Dr. Black also describes the chief peculiarity to consist in the number of relapses. Purpuric spots are said not to have been common in Ballycastle(*b*) nor in Antrim(*c*), but both in Belfast and Ballymena they

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(*a*) Dr. Black. (*b*) Dr. O'Connor. (*c*) Dr. Bruce.

were generally met with. In the two former districts, crisis is also said not to have been common, while in the two latter it is remarked to have been frequent. Diaphoresis and epistaxis are stated to have been most frequent critical phenomena. Dr. Bruce reports that in his practice diuresis or diarrhœa also occurred occasionally as such.

Londonderry.—In this county the proofs of the contagious nature of the disease were also most convincing. Dr. Rogan reports that in the upper classes the brain was chiefly affected, in the lower, the chest and abdomen; and that the fever differed from previous epidemics in the frequency of chest affections, and the tendency to relapse. There were no starvation cases met with. Dr. Vesey, of Magherafelt, reports that purpuric spots were very general in the cases he attended; while Dr. Rogan says that petechiæ were common, but purpura rare. Well-marked crisis seems to have been very rare; when present, the most usual form of it was profuse perspiration, and epistaxis occasionally.

Donegal.—The evidence as to the disease being contagious was most conclusive. In Gweedore none of the rich were attacked(*a*). In Letterkenny(*b*) purpura and petechiæ were much more common in those previously suffering from want ; also typhus symptoms appeared much sooner. In all starvation cases Dr. Brady states that the stomach and bowels were more affected than in others. Typhoid symptoms followed early the starvation state. In Dr. Little's experience the difference between the late fever and former epidemics " consisted in the early appearance of typhoid symptoms, the frequency of purpuric spots, and of relapses,—in some cases three and four times." Crisis was not common. The only critical phenomenon noticed was profuse perspiration.

Tyrone.—Numerous proofs as to the disease being contagious are reported from this county. Head symptoms were

(*a*) **Dr. Brady.**   (*b*) **Dr. Little.**

more frequent in the better classes; dysentery and diarrhœa among the lower. In cases following starvation, typhoid symptoms, with petechiæ and purpura, were more frequent than in others not so circumstanced : these symptoms followed immediately. Dr. Hamilton, of Omagh, reports as his experience, that the chief characteristics of the late epidemic were "the frequent complications of dysentery and purpura, the tendency to relapse, and in being followed by pains resembling acute rheumatism." Purpuric spots were common. Crisis was very general, consisting in "perspiration or return of diarrhœa after being checked. I have often observed," states the authority already quoted, "a crisis after the application of the blister, without being able to account for it otherwise."

Cavan. — Drs. Halpin and Mease write : "We have no doubt of its contagious character. When the individual that was first attacked in a family was not immediately removed, the rule was, that every other member of that family became affected. We are in possession of a great number of cases in which the patients were perfectly sensible of having contracted the disease at the moment it had smitten them. For instance :

"No. 1. A medical attendant of a dispensary visited a patient in fever at her own house. On leaving this patient, he told his servant that, on coming down the stairs from the sick room, he was assailed by some extraordinary but abominable stench. He said he felt the fever seize him at the moment, and that he should never recover. He died on the ninth day after, of low typhus fever.

"No. 2. His successor visited a temporary fever hospital, of which he was in charge. On returning home, he told his wife that he had fever; he mentioned the patient's name from whom he had taken it. This patient had maculated typhus. He said he was aware of the moment of the imbibition of the poison. He felt that his system had received a shock from which he

never would recover. The patient alluded to died within two
days of this visit.   Dr. —— died on the twelfth day, of fever
of a similar character.

  " Several Roman Catholic clergymen in this locality suf-
fered from fever; they were all able to detail the circumstances
attendant on the contraction of the disease.   All were sensible
of the moment they became affected.   They all died. A cler-
gyman of the Established Church took fever from a patient in
a filthy hovel in this town. He was aware at the moment that
he was seized with it; it ran a course of fourteen days.   He
recovered.

  " One of your reporters took fever in the hospital a very
short time before it was closed. He felt the shock while stand-
ing beside the bed of a stout mason, who laboured under macu-
lated typhus. This patient died within three days after. Your
reporter's life was despaired of for many days.   His fever ter-
minated on the twenty-first day without perceptible crisis. The
matron of our hospital had fever three times. One porter died
of fever; another had the disease very severely.   All our
nurses, eleven in number, suffered; some twice, some three
times.   There was but one individual connected with this hos-
pital, your other reporter, who did not suffer severely from
fever while it was in operation."

  In the higher classes the head was chiefly affected; in the
lower, the stomach, bowels, and lungs. Cases arising after
starvation were generally mild, requiring little treatment, and
progressing favourably under the use of light nourishing diet,
and a moderate quantity of stimulants. "Well-marked typhoid
symptoms followed the starvation state in from two to three
weeks." The chief peculiarity of the late epidemic in this
county consisted in the short course of the primary fever and
the frequency of relapse. Purpuric spots were observed in very
few cases. " In primary cases where the patient was under
twenty years of age, a crisis was usually observable on the fifth

or seventh day, and was most frequently ushered in by general perspiration"(*a*).

Armagh.—Evidence of contagion generally unequivocal; but Dr. Leeper, of Loughgall, states that, in his opinion, as regards the non-typhoid form of the disease, it was doubtful. In his practice, pure typhus without dysentery occurred in the better classes, and short fever with diarrhœa and dysentery among the poor. In Armagh head symptoms preponderated amongst the higher classes(*b*). Diarrhœa and dysentery were most frequent in cases following starvation. The particulars in which this fever differed from former epidemics were the shortness of the attack and the frequency of relapse. Purpuric spots were not common. Crisis was frequent amongst the lower classes; but not well-marked among the higher. Perspiration and sometimes diuresis or diarrhœa were the most frequent critical phenomena.

Down.—The evidence as to the contagious nature of the late fever in this county is positive. "I have no doubt," writes Dr. Hunter, of Bryansfort, Castlewellan, "that the disease was often propagated by contagion, especially among the poor, whose habits in every way tend to such a result. It was remarked, however, that among the upper classes, where attention was paid to cleanliness and ventilation, the disease, though appearing in a very malignant form in one individual, seldom attacked the attendants or other members of the family. Indeed its spread under such circumstances was very rare, but sporadic cases of fever often, in my experience, caused the disease in other persons by contagion." Dysenteric complications were most frequent amongst the lower orders; and dysentery and prostration marked those cases following starvation; well-marked typhoid symptoms following the starvation state usually on the fifth or sixth day. Purpuric spots were common in the months of May and June, 1847. "Crisis was not

(*a*) Drs. Mease and Halpin.   (*b*) Dr. Cuming.

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common; when present it was marked by sleep and perspiration"(a).

Third Class of Queries.—Complications.

Antrim.—Dysentery most frequently followed the fever, occurring in convalescence. In Ballymena(b) it very often preceded it also, but in Ballycastle(c) it was not present in a well-marked form. In Belfast(d) cerebral complications were the most frequent; in Ballymena, abdominal; and in Antrim(e) there were seldom any complications except among the upper classes, and in them the cerebral predominated. " In the epidemic at Ballycastle, the digestive organs and lungs were unusually free from congestion. The fever appeared to exert all its violence upon the nervous system, and those patients got on most favourably whose heads were blistered very early in the disease. The congestion of the conjunctiva was more marked than I had ever seen it in any epidemic"(c). Relapses were frequent, except in Dr. O'Connor's district; Dr. Malcolm reports that they occurred " almost regularly" in his first type (see p. 109). In relapsed cases the primary stage was short, " terminating in five days"(b), and " the relapses were generally more severe"(e). Petechiæ never appeared in relapse when they did not occur in the primary fever. The heart's action was feeble; " excessive debility of the organ in grave cases"(d); "sounds modified as in ordinary typhus"(c). In Dr. Malcolm's practice epistaxis was frequent, and generally occurred early; in Dr. Black's at the termination, or about the eighth day. No enlargement of the spleen was observed in any case, either during or subsequent to the fever. Bed sores were very rare in Antrim. In Ballymena sloughing over the sacrum and trochanters was frequent in old cases, and in Belfast sloughing and mortification over the sacrum, from pressure, sometimes occurred.

(*a*) **Dr. Brabazon, Downpatrick.**   (*b*) **Dr. Black.**
(*c*) **Dr. O'Connor.**   (*d*) **Dr. Malcolm.**   (*e*) **Dr. Bruce.**

Derry.—Dysentery was prevalent at all times, and frequently preceded the fever. In Magherafelt(*a*) the abdomen and head were chiefly engaged. From Derry Dr. Rogan writes, that the complications occurred there in the following order, as regarded their comparative frequency:—1st, bronchitis ; 2nd, dysentery ; 3rd, pneumonia ; 4th, jaundice ; and that relapses occurred in about a third of his cases. Elsewhere in the county they were also very frequent. In Londonderry the duration of the primary fever, in relapsed cases, was much longer than it appears to have been in other parts of Ireland, " lasting from nine to twelve days"(*b*), while the relapses were seldom longer than four. Petechiæ very rarely appeared in relapse when they did not occur in the primary fever. No morbid phenomena of the heart or spleen are noticed as having been present. Epistaxis was occasionally present at the crisis. Bed-sores were frequently met with by Dr. Vesey, terminating in gangrene and sloughing, often to a considerable extent. Dr. Rogan did not meet with them frequently. They were chiefly in the old.

Donegal.—Dysentery nearly always accompanied the fever. Gastric complications were most frequent. Relapses were nearly always present, " sometimes occurring three or four times in the same case"(*c*). No peculiarity was noticed as having been present in those primary cases which were followed by relapse. Petechiæ were observed by Dr. Little, but not by Dr. Brady, in relapse, when they did not occur in the primary fever. No morbid phenomena of the heart or spleen were noticed by the latter physician; but Dr. Little observed that, although the heart's sounds were normal, its action was always weak. Epistaxis was not frequent. " I only had it," observes the same physician, " in one case, which I considered convalescent, when hemorrhage suddenly occurred from nose, mouth, bladder, and

(*a*) Dr. Vesey.   (*b*) Dr. Rogan.   (*c*) Dr. Little.

intestines, with large purpuric spots over the entire skin and mucous membranes, as far as visible. It terminated fatally."

Tyrone.—Dysentery was frequent in all stages, " preceding, accompanying, and following the fever"(*a*). Gastro-intestinal complications were the most frequent. Relapses were of very common occurrence, "the relapsed stage being of shorter duration than the primary fever"(*b*). Petechiæ did not appear in relapses when not present before. No morbid phenomena of the heart or spleen are noticed as having been present. Epistaxis was frequent about the middle period of the disease. Bedsores were not often met with. When they did occur, they were in the form of very deep sloughs.

Cavan.—Dysentery was not of frequent occurrence. It appeared in a very few instances, and of a very fatal form, as a sequela to the disease. The most usual complications were a low degree of inflammatory action in the stomach, congestion of the lungs, and congestion of the liver. Relapses were very frequent. In the relapsed cases, the prostration was extreme, and the subsequent recovery protracted. Petechiæ did not appear in relapse when they did not occur in the primary fever. " The most striking morbid phenomenon of the heart was extreme slowness of its action, in nine cases the pulse remaining so low as from forty to fifty beats in a minute during the entire progress of the disease, notwithstanding the copious administration of the strongest stimulants; yet all these cases terminated favourably." Epistaxis occurred occasionally towards the termination of the disease, and, when it did, was generally accompanied by hemorrhage from other parts of the body. Enlargement of the spleen was not observed, and bedsores were not frequent(*c*).

Armagh.—The dysentery both preceded and followed the

(*a*) Dr. Hamilton, Omagh.   (*b*) Dr. Hamilton.
(*c*) Drs. Halpin and Mease.

fever. Diarrhœa was the most general complication, occurring in about fifty of the cases at Loughgall(*a*). In almost every case of famine fever relapse occurred, but "not among the higher classes"(*b*). Dr. Leeper frequently observed that the second sound of the heart was absent in many cases, and that its return was a favourable change. Epistaxis occurred occasionally in the middle stage. " It was sometimes followed by relief, but at other times, even at an early stage of the disease, it was considered an unfavourable symptom, indicating a broken-down condition of the blood"(*b*). Bed-sores were very rare.

Down.—Dysentery was very frequently present, before, during, and after the fever. " Gastro-enteric complications were the most frequent; next, congestion of the head, and then of the chest"(*c*). Relapses were very frequent, and more protracted than the primary cases. Petechiæ were sometimes noticed in the relapse, though they had not been previously present. Dr. Brabazon mentions that he noticed frequently a feeble impulse of the heart, with voluminous pulse at the wrist. Epistaxis was frequent early in the disease. Bed-sores were very infrequent.

Fourth Class of Queries,—including the Mortality and morbid Appearances.

Antrim.—The mortality was greater in the upper classes. In Ballycastle(*d*) it was 1 in 5 in the middle classes. In the Belfast General Hospital(*e*) it was nearly 1 in 8,—but this included dysentery cases, which were unfortunately mixed up in the registry with the fever cases. In Belfast, where alone *post mortem* examinations appear to have been made, nothing remarkable is noticed as having been present. No data exist in that city from which a comparison could be drawn as to the difference in the mortality among those attended in their own

(*a*) Dr. Leeper.   (*b*) Dr. Cuming.   (*c*) Dr. Brabazon, Downpatrick.
     (*d*) Dr. O'Connor.   (*e*) Dr. Malcolm.

houses or in hospitals. In Ballycastle it was greater among the former, and in Ballymena(*a*) among the latter. The towns and densely populous districts always exhibited a greater amount of mortality than the less thickly populated places. Dr. Black remarks also that it was greater in low marshy districts.

Derry.—In this county the fever was more fatal among the upper classes. Dr. Rogan states that in the cases examined by him after death, no constant or peculiar lesion was observed. The mortality was much greater in those attended at their own houses than in hospital. Dr. Vesey reports that there was no difference in the amount of mortality in the town and rural districts. Dr. Rogan states that it was greater in the latter, "owing," he adds, "probably, to the facility for the early removal of patients to fever hospitals in town."

Donegal.—In Letterkenny(*b*) the mortality was $8\frac{1}{2}$ per cent. in all cases, but greater in proportion in those previously worn down by disease. It was only 1 per cent. in Gweedore. No *post mortem* examinations were made. There is reported to have been no difference in the per centage of the mortality in town and country districts.

Tyrone.—In the Omagh Fever Hospital the mortality was 92 in 814 cases, about 1 in 9. No opportunity was afforded of making *post mortem* examinations. The mortality was equally as great in densely as in thinly populated districts.

Cavan.—" In the upper classes the mortality amounted to at least 66 per cent. In the Cavan temporary Fever Hospital, which was opened on the 9th of April, 1847, and closed on the 10th February, 1848, out of 1236 cases forty-eight died, being a mortality of $4\frac{1}{4}$ per cent. No *post mortem* examinations were made"(*c*). The mortality was greater in those attended in their own houses than in hospital; and it seemed to depend rather on the crowding together in houses than on any peculiarity in the district.

(*a*) Dr. Black.   (*b*) Dr. Little.   (*c*) Drs. Mease and Halpin.

Armagh.—The mortality was proportionally greater among the higher classes. It was also much greater in those attended at their own houses.   No *post mortem* examinations were made.

Down. — Dr. Brabazon reports that the mortality was greater among the destitute.   Nearly all the cases in his district were sent to hospital.   He states that the town and densely populated districts in his neighbourhood, beyond doubt, exhibited a greater amount of mortality than the thinly populated rural districts.   No *post mortem* examinations were made.

Fifth, sixth, and seventh Classes of Queries,—relating to the Duration of the Disease, Modifications, and Sequelæ.

Antrim.—The usual duration of the disease, according to Dr. Malcolm, varied in the different types described by him. The first lasted for eight days, and the relapse for three or four days; the second for ten or twelve days; and the third for fourteen days, and sometimes longer. In Dr. Black's two types, the duration of the first was about nine days previous to the relapse; the second about fourteen days, which appeared to be the average duration of the fever in other parts of the county. The stage of convalescence was in general very tedious, lasting frequently for a month, or even longer; but in Dr. Malcolm's first type it was very short, seldom lasting longer than a few days. The primary stage of those cases followed by relapse was usually short.   In the Belfast Hospital the original cases were distinguished by high fever, very white tongue, and flushed face.   In Ballymena, the modifications of the symptoms noticed in individuals of the same family were, in the aged, petechial fever, in the young, relapses.   Dr. Malcolm has also noticed that the younger were more liable to relapse; and Dr. O'Connor, of Ballymena, mentions that in his practice the fever in grown persons generally preserved its type in a very remarkable degree.   Erysipelas, dysentery, abscesses, and gangrene,

were the usual sequelæ met with in the Belfast Fever Hospital. In Ballycastle, sequelæ of any kind were not frequent.

Derry.—The duration of the fever varied from about twelve to twenty days, " and from nine to twelve days in relapsing fever"(*a*). Convalescence was very slow in general, often lasting for several weeks. " These cases," writes Dr. Rogan, " which were followed by relapse, were of a peculiar character, differing essentially from true typhus." The symptoms occurring in different members of the same family were pretty uniform. Dr. Vesey, of Magherafelt, describes abscess, diarrhœa, and dropsy, as the usual sequelæ of the fever.

Donegal.—In this county the duration of the fever was unusually long, and the convalescence very protracted. Dr. Little reports that the disease lasted from " five to seven weeks, including convalescence," in his district; but Dr. Brady states that the duration of the fever was " from three to six weeks, and the convalescence from four to eight weeks longer, from want of food," in that part of the county where he resides. Diarrhœa, anasarca, and erysipelas of the head were the usual sequelæ that occurred in Dr. Little's practice. He also mentions that small-pox followed many of his cases.

Tyrone.—The fever lasted for about fourteen days, and the convalescence from two to three weeks longer. The usual sequelæ were arthritic pains very frequently, and in some cases deep-seated abscesses in or about the parotids, and a few instances of sloughing of the mouth and cheeks(*b*).

Cavan.—The average duration of the disease was about twenty-four days; the convalescence about ten days longer. In those primary cases which were followed by relapse, the disease usually ran its course very mildly in five or seven days. " There was a remarkable similarity of symptoms in members of the same family, and we remarked that two or more of the

(*a*) Dr. Rogan.   (*b*) Dr. Hamilton, Omagh.

same family were generally convalescent at the same time; if one of them relapsed, every one of the others followed the same course, and it was not infrequent to find them all relapsed on the same day"(*a*). Anasarca, swelling, and dysentery were the usual sequelæ.

Armagh.— The duration of the disease was from about a fortnight to three weeks, and the convalescence about the same length. In Loughgall(*b*), the primary cases, which were followed by relapse, lasted for eight days. There was then partial convalescence, and then relapse. Dysentery was the most usual sequela.

Down.—The fever usually lasted for about a fortnight, and was followed by a convalescence of from one to three weeks. Anasarca and phthisis were the most usual sequelæ.

Eighth Class of Queries,—referring to the Treatment.

Antrim.—The reports from this county are unanimous in stating that a stimulant plan of treatment was usually found most serviceable, and in many of them it is mentioned that the use of stimulants was required early in the disease. Wine was largely employed, and its administration seems to have been looked upon as essential. General bleeding was not resorted to, but local was used in congestions; "when employed early in head symptoms, it was attended with good effect"(*c*). Mercury was used by Dr. Malcolm in all local inflammations of parenchymatous organs. It does not appear to have been given in any case to produce its specific action. Opium was employed where dysentery or diarrhœa prevailed, and also with a view of producing sleep. " Opium, with tartar emetic, as recommended by Dr. Graves, was employed in many cases, when sleep could not be obtained by other means; and this treatment succeeded in almost every case where it was had recourse to"(*d*).

Derry.—A stimulant plan of treatment was found most suc-

(*a*) Drs. Mease and Halpin.   (*b*) Dr. Leeper.
(*c*) Dr. Black, Ballymena.   (*d*) Dr. O'Connor, Ballycastle.

cessful. Wine and other stimulants were used largely. The following is an outline of the method employed by Dr. Rogan of Derry: "In uncomplicated fever, the general treatment consisted in attention to the bowels, cleansing the skin, shaving the scalp, and the use of mild diaphoretics; where cerebral affection was well marked, leeches to the temples, cold to the scalp, blisters to the neck, and tartar emetic, combined with laxatives. When bronchitis was present in young subjects, and in the early stage, general bleeding was occasionally used. In both old and young, tartar emetic, combined with small doses of tincture of opium, and, in the advanced stages, cordials, stimulants, and blisters. When pneumonia occurred, general bleeding, calomel, with tartar emetic and blisters to the chest; in the complication with dysentery, opium, with the milder preparations of mercury." The same physician also mentions that the employment of general bleeding seemed to protract convalescence. Elsewhere in the county, bleeding seems to have been very rarely employed in any form. Mercury was not used to produce its specific effects. Opium was chiefly given where dysentery appeared.

Donegal.—A stimulant plan of treatment was here also found most serviceable. "Wine and other stimulants in large quantities, with opiate enemata, and acetate of lead and opium internally, to check the diarrhœa which occurred in almost every case at some stage, constituted the treatment I employed"(a). General bleeding was never had recourse to, and local only occasionally, to meet head symptoms. Mercury was used merely as an alterative, but Dr. Brady employed it in the first stage, when dysentery was present. When this complication occurred in the middle and last stages he used opium, which was also employed for the same purpose by Dr. Little, and with benefit.

Tyrone.—The stimulating treatment was found most ser-

(a) Dr. Little, Letterkenny.

viceable in this county, and was very early required. Dr. Hamilton adds, that blisters to the abdomen were very useful, and also that he used whiskey as a stimulus, which he found to agree much better with his patients than wine. Local bleeding was alone employed, but even in the form of leeching over the epigastrium it was not well borne. Mercury was but seldom administered. " Opium was much used, and much earlier than formerly, with the best effects; combined with tartar emetic in cases such as recommended by Dr. Graves, many lives have been saved that would otherwise have been hopeless"(*a*).

Cavan.—Stimulants were in this county also found most useful. Combined with them Drs. Mease and Halpin employed counter-irritation over the stomach, thorax, or entire abdomen, either by blisters, fomentations of hot turpentine, or mustard. Hydrargyrum cum cretâ, in small doses, frequently repeated, but not pushed to salivation, with or without Dover's Powder, was found very serviceable. " Blood-letting," say they, " was resorted to only in six cases; in one, where the fever was complicated with pneumonia, small bleedings were practised with relief to the distressing symptoms. In three cases no appreciable benefit followed, and in the remaining two we were of opinion that it was injurious. In the first case the bleeding was from the arm ; leechings and cuppings were employed in the others. Calomel, combined with extract of hyoscyamus, opium, or morphia, was frequently had recourse to in irritability of the stomach, with great benefit. In a few cases this combination produced ptyalism very rapidly, which we did not desire, as we had no faith in mercurialization in checking the disease, or rendering it more tractable. Where salivation was thus accidentally produced the recovery was protracted greatly, and the constitution seemed to be so much enfeebled that, when a relapse occurred after, the patient not unfrequently sank. Opium was generally used as a sedative at

(*a*) Dr. Hamilton.

night, where head symptoms did not preclude it. These cases
were few. The preparations most relied on were Dover's Pow-
der, acetum opii, and acetate and muriate of morphia; these
latter appeared specially applicable to gastric irritation."

Armagh.—Dr. Leeper's plan of treatment was expectant.
Dr. Cuming, of Armagh, has forwarded the following report of
the method adopted by him:

" When the disease was seen at its very beginning, upon
the first or second day, it was sometimes averted by the an-
timonial solution given so as to act freely on the stomach,
bowels, and skin. In other instances, particularly where there
were any bronchial complications, a grain of calomel with one
of ipecacuanha, every three or four hours, was productive of
benefit, more particularly if the mercurial effect could be
speedily established in the system. If the mercury did not
produce its specific effect in the course of a few days, I discon-
tinued it altogether, as I consider that when it does not soon
act as a *remedy*, by a further perseverance in its use it may come
to act as a *poison*.

" Cold applications to the shaved scalp, and a *moderate* de-
traction of blood, by means of leeches, from the temples, when
there was evidence of cerebral congestion, were often of service
at an early stage of the disease.   As the fever advanced, how-
ever, the treatment was for the most part of an expectant na-
ture, and it was very generally found necessary to support the
strength by wine, arrow-root, chicken broth, and beef tea.
At an advanced period of the disease benefit seemed frequently
to result from the application of a blister to the nape of the
neck, crown of the head, or between the shoulders, according
as there was evidence of congestion in the brain or lungs."

Wine was freely employed and preferred to other stimu-
lants.   General bleeding was never resorted to, and local very
rarely, not at all by Dr. Leeper, who also very seldom gave
mercury, and, when he did use it, did not think it productive of
good effects.   Opium was employed in the advanced stage of

the fever, and nearly always with good results, especially when there had been much sleeplessness, delirium, and nervous irritability. " A full opiate," says Dr. Cuming, " combined with an antimonial, I often found to be attended with the most beneficial effect."

Down.—A generally stimulant plan of treatment was found most serviceable. " Wine and other stimulants," writes Dr. Brabazon, of Downpatrick, " were used extensively and necessarily in the greater number from the moment of admission, in many before removal from the conveyance into the hospital." General bleeding was not resorted to, and local only very rarely. Mercury was given frequently in hepatic congestion, and sometimes in dysentery. Opium was occasionally administered in combination with tartar emetic, head symptoms prevailing. It was very often employed in dysentery.

Summary of Reports not comprised in the foregoing Details.

The character of the epidemic in a portion of the county of Fermanagh, may be learned from the following observations of Dr. Betty, of Lowtherstown :

" In the early part of the summer of 1847 I had extensive opportunities of seeing this fever in all its stages, having charge of the Union Fever Hospital of forty beds, and a very large dispensary district, which seldom at any season wants fever of typhoid character. That the then epidemic was contagious I do not think any person who witnessed it could have a doubt, particularly amongst the poor. It was highly so in their wretched abodes, where there is such want of cleanliness, and, I may say, careless indifference about fever ; as, when the disease is once pronounced fever by the medical man, the poor seem to think it will run its course, and in most instances will not attend to either medicine or medical advice, although all or a greater part of the family may be attacked. With the better classes this disease has seldom gone farther than one case in a family

(in this county), which is, no doubt, owing to cleanliness, caution, and attention to free ventilation.

" I have remarked at the workhouse that persons coming in while in a state of starvation were often taken with fever, and in many instances had tedious recoveries. I think that in the better classes the head was much more affected than in the poor. The medical profession suffered more from this fever in this county than any of the better classes. I had a very severe attack myself ; crisis on the thirteenth day without any visible phenomenon ; my tongue was moist all the time (I understand) ; my head was greatly affected, and I had petechiæ on the fifth day. I was well aware of the time I caught the disease,—after visiting a man who had lately come from Scotland : I felt ill on my way home. The worst class of fever we had was that which was imported from Scotland, and the common people were well aware of it, and called it the Scotch or black fever, from the great darkness of the countenance during the attack. In a few instances dysentery followed fever in my hospital, and was generally fatal."

(*To be Continued.*)

[We are compelled by the necessary mechanical arrangements of our Journal to close this portion of the Fever Report thus abruptly. It will be continued in the next Number. In the mean time we would feel much obliged by our country friends, particularly in the West, who have not yet answered our Circular, doing so with as little delay as their convenience will permit; and we would still gladly receive additional communications from the North and South.—Ed.]

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

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Medical Jurisprudence. By ALFRED S. TAYLOR, F. R. S., Professor of Medical Jurisprudence and Chemistry in Guy's Hospital. Third Edition. London, Churchill. 1849. 1 vol. Fcap. 8vo. pp. 849.

In an early Number of our New Series the second edition of Professor Taylor's Jurisprudence was reviewed at length; and more recently we had the gratification of bringing before our readers his admirable Treatise on Poisons, and expressing our opinion of its merits. The publication of either of these works would be sufficient to place him in the foremost rank of medical jurists, and the authorship of both shows that his industry is equal to his talent. The present edition has undergone considerable alteration and improvement, notwithstanding the short time that has elapsed since the second was published. Much of it has been rewritten, eight new chapters have been added, the table of contents and index greatly enlarged, and the work increased in size by the addition of more than 100 pages : in short, every new fact of importance in the science, together with a careful selection of cases in their medico-legal relations, from those recorded in the United Kingdom, on the continent of Europe, and in America, has been added, and the volume thus rendered a faithful and trustworthy exponent of the present advanced state of this important department which so closely unites the medical and legal professions.

The subject of poisons, too, although treated at considerable length in the volume the author has specially devoted to this branch of medical jurisprudence, is not neglected in the work now before us. In it is contained an admirable summary of his more extended observations, quite sufficient for the general purposes of the physician and the barrister. Mr. Taylor's two volumes, printed in the clear and beautiful type of Mr.

Churchill's manuals, may be truly said to constitute an ency-clopædia of information on forensic medicine, and cannot fail to promote the cultivation of this most important division of medical study.

The additions under the various heads to the present edi-tion of his Treatise on Jurisprudence are thus stated in the preface:

"In the section on wounds, additions have been made on the following subjects:—the medico-legal examination of wounds; physical, chemical, and microscopical evidence in reference to blood stains ; on imputed or self-inflicted wounds ; medico-legal facts connected with the fatal results of surgical operations; medical responsibility and malapraxis; death from the entrance of air into the veins; ruptures of the kidney and urinary bladder; spontaneous fractures; wounds from fire-arms not loaded with ball; varieties of burns; injuries from melted metals; and on injuries (simulating wounds) caused by fire.

" In the section on infanticide:—on the death of the child before respiration; on the alteration in the chemical composition of the lungs by respiration; on marks of violence, and on the detection of food in the stomach as signs of live birth; additional observations on the hydrostatic test; on the newly discovered fallacies of the *do-cimasia circulationis;* the congenital closure of the ductus arteriosus and foramen ovale; and on the occurrence of severe accidental in-juries to children during birth.

" The chapters on pregnancy and delivery have been almost en-tirely rewritten.   Under these heads will be found additional cases and observations on the plea of pregnancy, and on the signs of deli-very in the dead in cases of criminal abortion.   Under this branch of the subject, the new views of physiologists regarding the evidence derivable from the presence of corpora lutea are also fully consi-dered.

" Many additional facts have been recorded in reference to the medico-legal bearings of the Cæsarean operation, Tenancy by Courtesy and Age and Minority. The chapter on poisonous gases and vapours has been in great part rewritten.   In the section on insanity there will be found among the additions the decision of the judges on me-dical certificates, with new cases and observations."

This extract shows some among the many improvements in the present edition of Dr. Taylor's treatise; it will also prove, we are certain, the necessity which each and all of our readers must feel of becoming, for their own sakes, acquainted with its contents.   We need scarcely again repeat our opinion of the value of this volume to the two professions; of this the state-ment in the preface, that since the first appearance of the work in 1844 no less than 4000 copies have been sold, is much stronger testimony than any we could offer.

1. *The Ethnological Journal ; a Monthly Magazine of Ethno-
   logy, Phrenology, and Archæology, considered as Elements of
   the Science of Races, with the Application of this Science to
   Education, Legislation, and Social Progress.* Edited by
   LUKE BURKE, Esq. London, Ballaire. Parts I., II., III.

2. *Lectures on the Races of Men.* By ROBERT KNOX, M. D.,
   F. R. C. S. Published in the Medical Times.

3. *The Natural History of the Human Species: its Typical Forms,
   Primæval Distributions, Filiations, and Migrations.* Illus-
   trated with thirty-four coloured Plates, &c. By Lieut.-Col.
   CHARLES HAMILTON SMITH, K. H. Edinburgh, Lizars.
   Small 8vo., 1848. pp. 464.

SCIENCE achieves its greatest successes in dealing with the less
noble materials. We can predict the movements of the heaven-
ly bodies, weigh the stars, and measure the forces which exca-
vate the craters of the lunar volcanoes; but the law of gravity
which gives these amazing results is only conversant with
brute matter. If we rise to the phenomena of life, or ascend
still higher into the region of mind, our exact formulas have
to be abandoned; and we must be content with a less absolute
nomenclature, and humbler conclusions. The facility, how-
ever, of systematizing in the lower material, naturally and al-
most inevitably invites us to deal in the same way with the
loftier and more subtle phenomena which surround us as we
rise to the contemplation of life,—vegetable, human, or spiritual.
We see economists thus daily endeavouring to discover and
apply laws as rigid as those of crystallization, or any other
phenomenon of brute matter, to social affairs, involving not only
the animal functions and instincts, but the sentiments of the
heart, and the faculties and aspirations of the human intellect
and soul. So again, in the division and classification of the
families of men, we observe the tendency to systematize and
generalize outrun all reason and experience. We have before
us two remarkable instances of this disposition among philoso-
phic minds, in the Ethnological Journal of Mr. Luke Burke,
and the Natural History of the Human Species, by Colonel
Hamilton Smith. The Journal, we think, was wanted; and
so was a popular treatise in which we might have Prichard
condensed, and possibly improved. But the aim of a Journal,
taking Ethnology for its subject, should rather be to collect
material for future classification, than to reduce the future
communications of new phenomena to a pre-arranged system.

Mr. Burke, however, has prepared in his first Number a Pro-
crustean bed, into which whatever may afterwards turn up
will have to be thrust and fitted, at whatever inconvenience of
stretching or amputation ; and in this we think he is in no
way to be commended.   We pass by his division of the *genus*
man, into harmonic and discrepant; but, taking up the har-
monic half of the genus (that is to say, man proper, as contra-
distinguished, in this revival of Lord Monboddo's views, from
the ape), we have the harmonic man divided again into two
branches, denominated the *intellectual* and the *physical:* the for-
mer, which indicates the Caucasian type, affecting intellectual
pursuits as the main business of life ; and the latter, which seems
to represent the Negro variety, having for their primary ob-
jects of existence physical exertion and animal enjoyment.
Such a division at starting would entail a good deal of arbi-
trary arrangement, as further facts might come in ; but what
shall we say of the prospect of embarrassment which Mr. Burke
has before him, when we follow up his anticipatory classifica-
tion a little further ?

" The intellectual races are divisible into nine species, each
having two varieties, and five supplemental or intermediate species,
each with two varieties: in all twenty-eight varieties or distinct
races.   The supplemental varieties, though essentially intellectual,
nevertheless approximate, in some respects, to the distinctive cha-
racter of the physical races.

" The physical races are divisible into four species, each of which
has from four to twelve varieties ; and there are besides supplemen-
tal varieties; the whole making thirty-five races of this branch.

" Thus the total number of the primitive races of the human
family is sixty-three."

Well indeed might our author deem it prudent to add as
he has done :—" It must be observed that the minutiæ of these
classifications are in part made upon theoretical and systematic
grounds; and therefore that they must be considered as in
some degree conjectural, and subject to future modifications."

It would appear from this preliminary indication of Mr.
Burke's views, that he regards his sixty-three diversities of
the human family as referable to two principal varieties, re-
presented by (we suppose) the Negro on the one hand, and
the Caucasian on the other.   The usual division recognised
by naturalists who have not felt themselves, in this regard,
bound by the statement of revelation, has been a tripartite
one.   Indeed, regarding mankind as sprung from the three
sons of Noah, we see nothing inconsistent with the sacred nar-
rative in assuming Ham to have been the parent of all the

Negro families. It is true this assumes something more than a *sporadic* diversity among the sons of Noah; and those who insist on specific differences, cannot be expected to reconcile their views to holy writ by such an accommodation. But Mr. Burke labours under no difficulty or scruple on this account; he enters, in his first Number, on a bold denial of the authority of Scripture in all matters of the kind. The point on which he assails the sacred volume is that of chronology,—a point, indeed, on which the enemies of infidelity have very often placed themselves and their friends in the wrong, by insisting on the testimony of the authorized (or indeed, on this point, of any) version, against the plain evidence of geological and other facts. It is very well known to all biblical scholars (although our preachers have not usually deemed it necessary to occupy the attention of mixed audiences with these considerations from the pulpit) that the books which constitute the Old Testament remained for shorter or longer periods committed to manuscripts of a very imperfect kind of writing, in which the consonantal letters only were expressed, the vowel sounds being left to be filled in, according to the context. It is equally well known that the three earliest versions of the books forming the Old Testament, viz., the Hebrew, the Samaritan, and the Septuagint, differ in their antediluvian chronology to a great and irreconcilable amount. These facts have generally inclined biblical scholars, who really know the nature of the evidences about which their science is conversant, to regard very tolerantly the large demands of geologists and other scientific inquirers, who insist on a still longer period than even (the most extended) that accorded by the Septuagint text, for the performance of those phenomena, which, they allege, must have been transacted on the surface of the earth, both before and since man's creation. It is true, some ill-read and narrow-minded men, ignorant of biblical science, but sufficiently distinguished among their more ignorant followers to be deemed worthy to act as annotators of new editions of the Bible, have insisted on the literal exactness of the chronology of the Authorized Version, in a way as irreconcilable with the ancient versions and with the facts of science, as it is inconsistent with ordinary prudence; but the number of these zealots is small, and scientific inquirers have the satisfaction to know that there is nothing insisted on by Christian divines of learning, hostile to, or irreconcilable with the longest periods required either for the successions of geological phenomena, or for the growth and diffusion of the families of mankind over the globe which they inhabit. On the contrary, the liberal

divine, yielding to the geologist the periods he requires, re-
ceives back from geology the most convincing confirmations
of the order and series of creation having been truly detailed
in Genesis; while the candid historical critic, if he have to
depart from the chronological canon of either or any version,
will willingly admit that the preservation, during a period of
1200 years, of a perfect agreement, in matters merely numerical,
between the different copies of a manuscript committed to
a mode of writing so imperfect as the unvocalized Hebrew,
is more than human reason could expect, or ordinary candour
would demand. Mr. Burke, however, seems to think it neces-
sary *in limine* to get rid of all the biblical records of the human
race anterior to the deluge; a preparation which we need not
say argues badly for the reasonableness of his further specula-
tions.

While we thus freely censure Mr. Burke for what strikes us
as an unphilosophic effort at system in a subject so difficult to
be systematized, and for a needless and ostentatious dissent
from authorities not necessarily in antagonism to any scientific
truth, we cannot but give him credit for having supplied the
want of a vehicle for facts and speculations, in one of the most
interesting inquiries that can occupy the mind of man. For while
the flowers of the field, the shells of the sea, and even the sea-
weeds that strew the shore, have had their respective chronicles
and repositories, man himself, the lord and governor of all, exhi-
biting greater diversities and more wonderful discrepancies, in
his unity, than any other created object, has, until very lately,
remained without any work specifically devoted to his own
illustration.   But the reason is obvious.   It is easy to classify
shells and flowers; a little less easy, but still very practicable,
to classify birds and mammals : but to trace the origins and
affiliations of families of men, with their diversities, not only of
physical characteristics, but also of speech and thought, of
habits of mind and feeling, of modes of life and social eco-
nomy, this is extremely difficult—arduous—demanding the
highest attainments, not only in physical science, but in history,
philology, and morals.   For he who would comprehend man
(not as a mere zoologist, but in an ample, philosophic way),
must be master, through man, of all that man has been created
to be, to do, to suffer, and to preside over   Speech alone (not
to speak of thought, feeling, and faith), that lowest faculty
which puts the difference between our race and the inferior
animals, has exercised the intellects of the most profound
scholars and philosophers, and has overtasked them.   That the
pursuit of ethnology, then, should have been neglected, is not

so surprising as that it should have been so boldly prosecuted, and, up to a certain point, prosecuted with so much success. For, whether arising from original specific differences, or from accidental diversities increased by local and social circumstances, so as to constitute a second nature, the human race has now been satisfactorily distinguished into several well-marked separate families, whose characteristics of person, speech, and even mind, exhibit remarkable and permanent differences. Whether any of these families be mentally or morally inferior to the others, is a question still unsolved; but the current of opinion, now running counter to the course it took some years ago in this eddy of science, tends every day more and more to affirm that such an inferiority exists, and is likely to continue until the inferior races be trodden out of existence by the march of the superior ones.

Although we are far from assigning to Mr. Burke an eminent place in the science,—thinking him, as in plain terms we admit we do, rash and insufficiently informed,—we willingly give him credit for having opened some views of social polity in connexion with this question worthy of the gravest consideration both by the philosophic historian and the statesman. The natural equality of mankind Mr. Burke denies; and on the contrary asserts not only an innate superiority over the other races for the Caucasian variety, but amongst the Caucasians themselves an innate superiority in one family over another, and in the aristocracies of individual families themselves over the masses. We make no doubt Mr. Burke has pushed his theory past the verge of philosophic induction; but when society suffers such grievous evils as now afflict the oldest and most famous seats of civilization, for the sake of "equality and fraternity," it is worth while to consider whether such principles exist in nature, or whether mankind may not in this, as in many former revolutions, have engaged in the overthrow of authority in order to exalt a delusion to the place of an axiom. It is true the doctrine is usually put forward with a religious sanction:

"Politicians have taken it for granted that men are equal and alike by nature, because scientific men have generally said they were so; and scientific men have generally said they were so, because theologians have told them that to say the reverse would be to contradict the word of God. Thus a question of fact has been settled by authority, and a question of science by unscientific men."

Remembering how theology formerly sought to interfere with astronomy and navigation, and seeing with what difficulty, even in our own time, geology has raised itself against the denunciations of a section of the less learned clergy, we are willing

to see the theological influence confine itself as strictly as Mr. Burke himself could desire to the spiritual domain. But as in geology, so in ethnography. The Scriptures themselves will not be found inconsistent with any results of truth. If science should conclude that one branch of the human family is of an inferior nature, physical or moral, the simplicity of faith will neither be scandalized nor surprised. In the curse pronounced against Canaan we have abundant indications of an unequal dispensation to reconcile the written word with any differences that may be shown still to exist; and if such differences should turn out to be illusory, no candid reader of the Bible will repine at having to class that passage of Genesis with the other portions of the Old Testament writings which have lost their force and significancy in the milder dispensation of the New. The idea of original equality is not peculiarly a Christian one. Borrow, in his Bible in Spain, gives a remarkable and beautiful instance of the same sentiment in the breasts of Moslems:

" A large boat now drew nigh, the stern of which was filled with Moors. Some of them were exceedingly fine men, and two amongst them, youths, were strikingly handsome, and, so far from exhibiting the dark and swarthy countenance of Moors in general, their complexions were of a delicate red and white. The principal personage, and to whom all the rest paid much deference, was a tall, athletic man of about forty. The Spanish sailor informed me, in a whisper, that he was a Santuron or big saint, and was so far back on his way from Mecca; adding, that he was a merchant of immense wealth. It soon appeared that the other Moors had merely attended him on board through friendly politeness, as they all successively came to bid him adieu, with the exception of two blacks, who were his attendants. I observed that these blacks, when the Moors presented them their hands at departing, invariably made an effort to press them to their lips, which effort was as uniformly foiled; the Moors, in every instance, by a speedy and graceful movement, drawing back their hand locked in that of the black, which they pressed against their own heart; as much as to say, ' though a Negro and a slave, you are a Moslem, and, being so, you are our brother. Allah knows no distinctions.' "

But Mr. Burke pursues his idea of specific differences to a much greater length, than in the mere case of national disparities; and contends for the essential superiority of every aristocracy of pure blood over the mixed breeds of the common people. All the ancient republics, he contends, were aristocratic, the power of the nobles being great in proportion to the purity of their blood, and the prosperity of the state commensurate with that power. The rise of the common people to political

influence he conceives to have been ever attended with turbu-
lence, civic impoverishment, and national weakness. At first
sight it seems singular that a man of philosophic mind, writing
in England, and with the example of America before his eyes,
should advocate these opinions. But if we survey the field of
history with a comprehensive view, we shall find evidences
enough of the main proposition insisted on by Mr. Burke, that
in all falling states, and " in all popular convulsions, the half-
caste is ever the cause and the agent of change." But change
is, doubtless, sometimes for the better.

Not to dwell, however, on speculations so transcendental,
let us give Mr. Burke the commendation due to the ability with
which he argues the question of differences of complexion as
affected by external agencies. Here, as we have said, the
present tendency of science is to revolt from the rule contended
for by Prichard, that differences of temperature, local circum-
stances, and habit, are alone sufficient to account for the diver-
sities of mankind in colour and stature. And, indeed, it seems
hard to imagine that a European race, through any length of
residence on the Senegal coast, or any length of habituation to
savage life, could become Negroes in complexion, in figure, or
in mental characteristics. And in point of fact there appear
to have been races differing almost as widely as Europeans and
Negroes, time out of mind, resident side by side in the hottest
countries, pursuing lives of a like kind, and yet showing no
tendency to approximate, save by intermixture of blood. It
would almost seem as if, when God gave separate languages to
men at the dispersion, and so divided them into different fami-
lies, he had imparted at the same time separate characteristics
of body and mind; and that, as by the fusion and mixture of
a number of originally separate dialects, the prevalent lan-
guages of civilization have been formed, so by the mixture of
bloods the traces of the aboriginal stocks are destined to dis-
appear in the growth of a comparatively small number of
dominant races;—all things appearing to tend to ultimate ho-
mogeneity. In the mean time whatever backward traces we
can discover seem to point to past disparity, and to disparity
of immemorial standing. In the Brazils, the hottest parts of the
new world, white and the darkest copper-brown tribes dwell,
and to all appearances have for ages dwelt, side by side. In
Peru the nations of the torrid plain at the foot of the Andes
are, Mr. Burke alleges, fairer than the dwellers on the table-land
above; the latter, he asserts (but we know not on what autho-
rity), " being the very darkest of all the purely brown races
of America." In Chili, he cites the Abbe Molina for the same

fact. In the Pacific Islands, the Polynesians and bearded Negroes offer a like example:

"Nothing can be more distinct than these two families of races, in all their peculiarities, mental and physical. The true Polynesian is gentle and friendly, gay and unsuspicious, of pleasing colour, handsome features, and fine form. The Negro or Cannibal, dark, suspicious, and treacherous, disagreeable in complexion, and frightful in features. Yet here are these races, living in the same latitudes, equally exposed to the vicissitudes of the weather, equally aboriginal, equally uncivilized, and yet thus continuing through thousands of years" [we must observe that here, as elsewhere, Mr. Burke, in the midst of much that is just and reasonable, lamentably damages his argument by palpable assumptions] " to differ in form, features, colour, language, and disposition, and never evincing the faintest approximation to each other in any of these particulars, except when it is evident that they are mixed in blood."

In the Indian Archipelago the Malay and Papoua races present similar diversities. Some of the fairest races of this part of the world are, it seems, on the authority of Mr. Crawford(a), to be found upon the very equator. The Javanese are among the darkest; the Dyaks of Borneo among the fairest. On the continent of Africa the Galla tribes are emphatically white Ethiopians. Many of the Moors of Barbary are as fair as Europeans; but may not this have arisen from an infusion of Scandinavian blood during the Norman kingdom? Amongst the retinue of Abd-El-Kader might be seen red hair and florid, though bronzed, countenances. In Southern Africa the Hottentots, Caffres, and Bosjesmans live under the same sun, seek their victuals, clothing, and shelter from the same plains and forests, yet in mind, body, and estate each differs from the others utterly, and, unless by intermixture of blood, irreconcilably. Major Harris, in his Travels in Central Africa, has made us acquainted with a tribe of pigmies dwelling in the south-west of Abyssinia, but three degrees north of the equator:

" They do not exceed four feet in height; their complexion is a dark olive, their hair is *not* woolly (that of the Bosjesman is so), and in the female reaches to the shoulders; the men have no beards, and they go perfectly naked; they have no king, no laws, no arts, no arms; possess neither flocks nor herds; are not hunters, do not cultivate the soil, but subsist entirely upon fruits, roots, mice, serpents, reptiles, ants, and honey; and all these things they eat raw, for they are ignorant of the use of fire."

Reading such an account as this, one reverts, with something

(a) History of the Indian Archipelago.

like a disposition to credence, to the traditions of the early dis-
coverers of fire, the inventors of the plough, and the first devisers
of laws, which are found in the records of almost every civilized
country. But it seems a favourite theory just now that such
improvements never originate spontaneously in any barbarous
country. Granting, however, that the poor pigmies of whom we
are now writing will, in all probability, have to look for their
Prometheuses and Triptolemuses from amongst their neigh-
bours, we see no reason for believing that these neighbours
had in like manner to receive their first instruction in the
rudiments of life from sources external to them; a conclusion
which, if pushed to its legitimate extent, would end in refer-
ring all the arts of civilization ultimately to special divine
communication. The niceties and varieties of grammatical
inflexion found in the older languages, and the difficulty of
supposing men in a state of barbarism capable of devising forms
of speech so complex and scientific, forcibly confirm the aver-
ment of the Scriptures, that language, in its diversities, was so
communicated: but when, in the absence of any authoritative
warrant of that kind, the arts of kindling fire, cooking food,
tilling the soil, committing sounds to written representative
signs, and the thousand other processes of civilization, are re-
ferred to a like origin, the argument seems to be pushed be-
yond any foundation of reason or likelihood. But because a
writer cannot imagine how mankind could have invented any-
thing, is surely more a reason why he should distrust his own
ability to form a judgment, than arrogantly adjudge that,
therefore, the invention must have been specially communicated
by miraculous interposition. We notice this dogma, of the
incapacity of a race to elevate itself, the more particularly, be-
cause not only do we find it insisted on by Mr. Burke, but
because it has been often brought forward as regards our own
countrymen; many writers having attempted by most fallacious
arguments to prove the hopelessness of the Irish ever being able
to do anything good or useful for themselves;—a pernicious de-
lusion, which has already done abundance of mischief, and, we
fear, is destined to do an infinite deal more.

We might multiply examples from Mr. Burke's disserta-
tion, *valeant quantum*, of the co-existence of striking physical
disparities with location in the same region; but we are sen-
sible that in all these the evidence of what is essential to the ar-
gument is wanting, namely, that the races with discrepant cha-
racteristics have been located in their respective places as long
as the others; for, until this shall be established, no conclusion

can be drawn with certainty, however much the frequency of phenomena connected with such a state of facts may incline the mind to believe that such a state of facts may really have existed.

On the whole, we think this undertaking of Mr. Burke a meritorious one, and cannot deny him the credit due to diligence and ability ; but his method is ambitious, his matter often insufficiently established, and his style more becoming a demonstrator than an inquirer.   His pre-arranged classifications, unphilosophic and unnecessary in themselves, are destined besides to perplex his future acquisitions, and to deprive many a valuable fact of much of its usefulness by coercing it into a place not properly its own.

Still more transcendental and dogmatic are the speculations of Dr. Knox, whose lectures on the races of men occupy a series of numbers of the *Medical Times*, commencing with the publication of the 17th of June last.   He is possessed with the idea of the distinction of races to an excessive degree, insisting that " no race will amalgamate with any other.   They die out or seem slowly to be becoming extinct."   This notion appears to have taken possession of his mind, with respect to the Sclavonic and Teutonic people of southern Germany, in an especially engrossing manner.   The conflict now going on in Hungary, and which, while we write, has embraced Vienna itself in the widening circle of its influence, affords, however, a striking practical commentary in confirmation of these views ; and it appears Dr. Knox does not now put forward his opinions on this subject for the first time :

" In my lectures delivered two years ago," he says, " when Europe was tranquil, I did not hesitate to foretell the coming approach of that great struggle between the dominant races for supremacy, now manifest to all thinking men, however the causes and the probable result may be mystified by a venal and a jesuitical press. Truths as manifest as the light of day had been either denied or shuffled aside in order to give a character of importance to the petty squabbles of financiers and statesmen. The language I then used respecting Germany and the Germans was considered by many as extravagant; and my statement respecting the comparative feebleness of the Austrian Government, and the causes of that feebleness, was declared to be contrary to the plainest observation.

" Again, when I stated that the Austrian empire existed merely by the sufferance of the other two great races—the Celtic and the Sarmatian—that it did not represent a *German empire*, properly so called, since most of its inhabitants were not Germans, but Sclavonians—a race with whom the true German would not amalgamate—

I found it difficult to make myself understood. The scholars of my country did not seem to know who the Sclavonians are, and could not see in them a *race* distinct from the German. Yet I foretold their disunion; showed that the Sclavonians had never amalgamated with the German; predicted that the Austrian empire would crumble to pieces if again attacked; explained as well as I could the downward course of the Sclavonian race, their disastrous defeats by the German and Celtic races, from Gustavus Adolphus to Napoleon. Let the events of the day speak for themselves. The long-headed statesmen of Europe despised the elements of race; the historian, the journalist, spoke of it merely as a philosophic theory, influencing neither the character of the nation nor of the individual. I pointed in my first lectures to Ireland, and was answered that the Irish had no doubt once been Celts, but, by living under Saxon laws, had now become very good Saxons! I was told that they (the Irish) were Catholic and spiritual, and believers in the faith, not because they are of Celtic blood, but merely by accident; that the English, Danes, Normans and Swedes, Hanoverians, Dutch, Saxons, were Protestants also, no doubt by accident, and not because they belong to the Saxon race of men. Thus making of all human history, as M. Guizot has done, a chapter of accidents. I next pointed to the Saxons in Europe—insular and continental, broken and dispersed; then to Celtic France—united, firm, and terrible to mankind, should she again take up the sword; to the jumble of races forming what was then called the kingdom of Prussia—Saxon, Sarmatian, Sclavonian; and to Austria, made up of tribes of Lithuania and of Southern Sclavonia; to the primitive Huns, Croats, and Germans, of the Baltic, held together by the sword. Overwhelming numbers of race (the Sarmatian or Russ), advancing as a vast wave of human beings towards Europe from the remotest steppes of Asia, are about once more to try their strength with the Celtic race—with civilized Europe. The Sarmatian and the Sclavonian races will, probably, unite to recover their lost position in Europe, to reconstruct the old falsehood, that the Sclavonians are Germans, and Vienna the capital of Germany. Some ten or twelve centuries ago the Gothic (Sclavonic race) seized the most fertile portions of the Roman empire,—called themselves Germans, sons of Teutonia!—established what they called the German empire. Vain attempt! Rejected by the true German, or the Saxon, as they ought to be called, the pretended head of all Germany now reluctantly throws off the mask, quitting the half-German, half-Sclavonic Vienna, and seeking a refuge amongst his Hunnish, Finnish, and Sclavonic tribes.

We cannot say that Dr. Knox's triumphant tone is not allowable, where events have so signally confirmed his predictions, made at a time when their confirmation in such a manner must have appeared extremely improbable. But, however happy his prognostications respecting the possible dissolution of the Slavo-Tudesque empire have been, he would be ra-

ther credulous who should expect similar confirmation of Dr.
Knox's views respecting other races, which, we confess, appear to
us to be at once extremely arbitrary and extremely visionary.
But very little, indeed, save what is arbitrary and imaginary,
could reasonably be expected from a writer who, in the pre-
sent state of knowledge on these subjects, undertakes to settle
and demonstrate

1st.   The antiquity of races.

2nd. The theory of progress.

3rd. The theory of extinction and development.

4th. The theory of beauty of form, of perfection, and per-
fectibility.

And, lastly, the transcendental anatomy of all the past and
present forms of animal life.

Compared with promises so ample, any performance to be
expected from the best-informed writers of the age could
hardly be otherwise than defective and unsatisfactory ; but
when Dr. Knox, in fulfilment of his undertaking, proceeds to
confess that, regarding the Copts, the first race whose anti-
quity he undertakes to settle, he positively knows nothing at
all, our expectation of enlightenment on transcendental ana-
tomy and the other high matters proposed to be demonstrated,
suffers extreme discouragement.—" A race I have not seen,"
—of whom, " whether ancient or modern, I can find only con-
flicting statements,"—who, in appearance, " in so far as I can
learn, resembled the ancient Egyptians, judging of them by the
busts still preserved, but even this fact I cannot fully make
out,"—whose language " corresponds, I think, with the an-
cient Demotic,"—but " no one now thoroughly understands
the hieroglyphics, and I doubt the accuracy of all the inter-
pretations,"—and as to the historical evidences bearing on
whom, " I look on the history of Josephus as, perhaps, the most
monstrous historic exaggeration ever penned, and he as one
of the greatest liars." Certainly these are not the data from
which we can expect any sound conclusions ; nor is Dr. Knox's
the sort of investigation from which conclusions worthy of
such data as really are accessible are likely to be derived. But,
as we have already said of Mr. Burke's undertaking, the task,
however we may quarrel with its execution, is, in its general
scope, a meritorious one ; and it would be unphilosophical and
uncandid to deny credit to a labourer who is, at least, in ear-
nest, and brings an active and vigorous mind to the prosecu-
tion of a favourite study.

We have placed Colonel Smith's book last in our list of
subjects, as worthier, from its pretensions and execution, of

the deliberateness of last words. Colonel Smith is not infe-
rior to either Mr. Burke or Dr. Knox in ambition, and exhi-
bits, we think, an even greater degree of complacency in the
disposal of his subject and the enunciation of his conclusions.
Not satisfied with the distribution of the human species in
their present seats, he enters on a preparatory review of the
earth as designed for their first reception, and as modifying
their subsequent progresses and ramifications by the successive
changes of its surface and condition. We are thus presented
with a preliminary treatise on physical geography, which,
although very well executed, is *dehors* the immediate subject
of Colonel Smith's inquiries, and would, we think, be more
acceptable and useful in a separate form. Colonel Smith, an
engineer, is possessed to excess with the geodetic idea. He
examines the ground with a thousand unnecessary precautions,
defining sea margins, river basins, mountain chains, and con-
tinental water-sheds, with a degree of precision sufficiently
interesting to any one desiring a geographical survey of the
globe, but, in bearing on the professed subject of his work,
almost totally irrelevant. Yet we have rarely met with geo-
graphic description combining so much of truth and of pre-
ciseness; and would esteem this preliminary treatise, if en-
larged into a separate volume, a valuable and acceptable addi-
tion to the physical library. We remember, however, that in
this notice we have to deal with the living actor—man, not
with the lifeless stage on which he plays his part; and must
leave Colonel Smith's description of the *terrene* for notice in
another place.

As regards man himself, Colonel Smith leans to the be-
lief in a specific difference between the three typical stocks
to whom the whole race are, in his opinion, referable. He
demurs to the test of specific difference usually received by
zoologists, viz.:

"That the faculty of procreating a fertile offspring constitutes
identity of species; and that all differences of structure and exter-
nal appearance compatible therewith, are solely the effects result-
ing from variety of climate, food, or accident."

If this definition were true, Colonel Smith submits that the
wolf, dhole, jackal, and dog, must be held to be one species,
for, he asserts, their hybrids are fertile. So, also, he asserts, are
the hybrids of the goat and sheep, of the hare and rabbit, and
of the cow and zebra: *sed de his omnibus quære?* In the case
of the cano-lupine hybrids reared by Cuvier, the breed, it is
alleged, degenerated rapidly, exhibiting a continually decreas-

ing fecundity, which must have led to ultimate extinction. As to the other alleged instances of prolific hybrids, we could have desired references to some authority ; but Colonel Smith neither alleges these matters of his own knowledge, nor adduces the testimony of others in support of his assertions. Simply, we do not believe the fact to be as alleged ; but even though we discredit the alleged failure of the tests in these instances, and adhere to the first half of the formula as propounded in the above words, we are far from adopting the second proposition, viz., that all the differences of structure and appearance amongst those capable of procreating fertile offspring, are properly referable to varieties of climate, food, or accident. It seems impossible to believe that any variety of climate, food, or accident, could ever make of a Tahtar or Caucasian a Negro, or of a Negro a Tahtar or Caucasian. Something there must be of a more than accidental, though less than specific difference : just as, while no naturalist denies the specific identity of the bulldog and greyhound, the spaniel and the mastiff, the boldest theorist will hardly venture to allege that by any influences of air, of temperature, of location, or circumstance, either or any of them could be made to pass into the form or to assume the instincts or characters of any of the others.   Be the original diversity of what origin it may,—whether specific, or whether of a character more consistent with an original parentage,—certain it is, at all events, that among men, as among the lower animals, and especially among that tribe of the lower animals which is most friendly to man, and most participates in man's higher attributes, there are well-marked *quasi*-specific differences, which no change of time, or place, or circumstance, has yet been found sufficient to alter, and which can only be modified, so far as we yet know, by the one method, of intermixture of blood. These stocks, as we have said, are regarded by Colonel Smith (as, indeed, we think, most inquirers now incline to regard them) as three in number, the Negro, the Tahtar, and the Caucasian ; or, to employ more descriptive names, the Black, the Beardless, and the Bearded varieties. The desire to systematize (a form of the inductive faculty which may be almost called instinctive) at once suggests the reference of these three stocks to the three Noachian branches : but, however consistently we may refer the black races to the parentage of Ham, we cannot assign the beardless variety to either of the other Noachidæ, for the Semitic Jews and the Japhetic Scandinavians are alike bearded men. Indeed, when we look abroad into central Asia, and carry our contemplations into the regions beyond the Indus, we find that an adjust-

ment of the tripartite natural division to the tripartite Noachian descents increases in difficulty, till it seems hopelessly impracticable ; and, as regards the progeny of Noah, we shall, probably, be obliged to reconcile ourselves to the following views of Schlegel, as perhaps the wisest and discreetest that can be propounded in the present condition of facts and of authority :

" Moses taught that man grew not up everywhere, and by chance, but was framed and fashioned by the hand of God himself, out of the earth, in one particular spot; and that the spark of divinity with which he is animated was not the fruit of robbery or audacity, but freely communicated to him by the love of his Maker. This doctrine affords the best clue to the history of man and that of his mind, and also the best point to which we may refer all the other traditions, and all the other doctrines of the East.   According to it, the oldest dwelling of the human race, and the scene of their earliest development, lies in the middle Asia, between the Euphrates and the Tigris, the Gihon, the Ganges, and the South Sea: the present race of men are entirely separated from that early people by an universal catastrophe of natural desolation.   The nations which have become again cultivated since this catastrophe may all be referred to three great families, remarkably distinguished from each other by their spirit and character.   The first is one spread abroad, for the most part, in that same middle Asia, and from the earliest date more enlightened than the others.   The second is a race, diffused principally over the north, of people more rude, indeed, but, at the same time, less corrupted and debauched in their manners, and, on that account, destined to derive, in after times, the chief benefit from the more early civilization of their eastern neighbours.   The last, a race of men which had, indeed, a very early part in all higher knowledge and refinement, but sank, even in the oldest times, into unworthiness and neglect, from their fearful moral corruptions, and that mental bewildering and apathy to which these gave birth.   This account of Moses is so confirmed to us by all the monuments and testimonies of antiquity to which we have access, is so extended and strengthened by every inquiry which we pursue, that it is well entitled to be viewed as the foundation of all historical truth."

Schlegel, here, in his contemplation of the Noachian progeny in its tripartite division of Semitic, Japhetic, and Hamite nations, manifestly confines his view to that part of the earth properly called the Old World, leaving the external races to be affiliated in some other manner to the original Adamite stock.   In plain terms, such a classification seems not inconsistent with a belief in the continued existence of some of the antediluvian races ; and if the necessities of science should at any time compel the inquirer to have recourse to such a solu-

tion of ethnographical difficulties, the example of so eminent
and learned a Christian as Frederic Schlegel will, it may be
hoped, serve as a sufficient protection. Indeed, the cautious and
orthodox Prichard conveys much the same notion in the ge-
neral result of his great work on the natural history of man,
classifying under the head of the Nomadic races a large pro-
portion of the human family to the apparent exclusion of the
threefold progeny of Noah. A tabular digest of Dr. Prichard's
arrangement will better illustrate what we mean to convey.

RACES OF MANKIND AS CLASSIFIED BY DR. PRICHARD.

1. *Syro-Arabian, or Semitic.*

Its branches are :—1st, Aramæan, or Syrian ; 2nd, He-
brew; 3rd, Arabian; 4th, S. Arabian, or Ekhkili.

2. *Egyptian (Hamite).*

3. *Indo-European, Arian, or Japhetic.*

Its branches in Asia are:—1st, Hindoos; 2nd, Persians ;
3rd, Afghans; 4th, Balûchi ; 5th, Kurds ; 6th, Armenians ;
7th, Ossetines.

Its colonies in Europe:—1st, Celts; 2nd, Germans; 3rd, Li-
thuanians; 4th, Sclaves; 5th, Italians, excepting the Rase-
nians, or Etruscans, who probably emigrated previously ; 6th,
Thracian, or Skipetari ; 7th, Hellenes.

———

The five great Nomadic races are :—1st, Ugrian ; 2nd, Turk-
ish; 3rd, Mongolian; 4th, Tungusian; 5th, Bhotiya.

The Ichthyophagi of Northern Asia.

1st, Namollos ; 2nd, Tschutschi ; 3rd, Kamtschatkans ;
4th, Yukagers; 5th, Samoiedes; 6th, Kurilians.

The aboriginal Races of India.

1st, Singhalese ; 2nd, Tamulian ; 3rd, Parbatiga.

Races of the Caucasus.

1st, Abassians ; 2nd, Caucasians; 3rd, Lesghi ; 4th, Geor-
gians.

African Races.

1st, Nubians; 2nd, Berbers ; 3rd, Galla; 4th, Mandingos ;
5th, Fúlahs; 6th, Hottentot and Bushmen; 7th, Kaffirs.

Races of Oceanica.

1st, Malayo-Polynesian; 2nd, Pelagian Negroes; 3rd, Alforas.

Races of America.

1st, Esquimaux; 2nd, Athapascas; 3rd, Algonquin-Lenápe; 4th, Iroquois; 5th, Cherokees; 6th, Sioux; 7th, Black tribes of California; 8th, Nootka-Colombians; 9th, Aztecas, or Mexicans, and Toltecas; 10th, Andian tribes of S. America; 11th, Brasilio-Guarani; 12th, Mediterranean group.

Looking at this table, it is difficult to avoid the conclusion, that Dr. Prichard takes the same general view which we conceive the extract above cited justifies us in ascribing to Schlegel. Colonel Smith, as we have seen, aims at a tripartite division still more absolute, in which no abnormal tribes have to be accounted for as nomadic or exceptional; but, while insisting on this threefold division, he discards, or, at least, tacitly disregards, the tripartite analogy of the scriptural account. He is compelled, however, to admit some exceptional races under the names (equally convenient as Dr. Prichard's " nomadics") of abnormal and aberrant types. Of these the giants and dwarfs of all races form one group, with which our author deals very agreeably. In a note to his chapter on giants are contained the following curious particulars:

" In the list, among the giant tribes of Syria alone, we find so many, that it is evident they were mere families, ruling, most likely by conquest, over Canaanitish tribes,—Nephilim, Rephaim, Zuzim, Gibborim, Enakim, Zamzumim,—some being distinguished by a malformation, having six fingers and six toes on the hands and feet; of which there is a counterpart in the legends of India. Of the stature individuals may have attained, are the examples of Teutobochus, king of the Cymbers, whose head overtopped the spears, bearing trophies, in the triumph of Marius. The emperor Maximinus exceeded eight feet; Gabarus, an Arabian, in the time of Claudius, was nine feet nine inches high ; he was shown at Rome. In the reign of Augustus, Pusio and Secondilla were ten feet three inches in height, their bodies were preserved and shown in the Sallustian Gardens. The Emperor Andronicus was ten feet high, according to Nicetas. Herodus Hercules was eight feet. Porus, six feet nine inches. Charlemagne, seven feet. George Castriot, or Skanderbeg, and George Freunsberg, nearly eight feet. Without, therefore, vouching for the exact measurements here given, we have still sufficient evidence to show that, even in recent times, men of high stature and of immense strength have been historically conspicuous. The last trace, in Great Britain, of the giant character,

may be perceived in the *Broinech* of the Hebrides, where they were called *Gruagaichs*, Gruage feachd; a hairy bandit; concealed in the glens, and coming forth at night to plunder. During the operation of the Berlin and Milan decrees, we have personally known, in London, a Moor, usually named Gibraltar, captain of a neutral merchant ship, who was visible, at a great distance, in the Strand, head, breast, and shoulders, above the hats of the passing crowd ; for he measured six feet seven inches and a quarter; and was, in all respects, of the finest proportions, and of very considerable acquirements in languages, &c."

We have already adverted to one pigmy nation of Abyssinia. Colonel Smith, in his chapter on dwarfs, supplies us with some further examples of the same kind, such as the Vedas of Ceylon, Cookies and Goands of Chittagong, east of the Bramahputra, who " reside in trees, with little more contrivance or use of reason than is evinced by the great apes of Africa."

" The Pouliahs of Malabar are no better; for they also form a kind of nests in trees, beyond the reach of elephants and tigers, never associating with other nations, and not even permitted by the Hindoos to approach within one hundred yards."

Giants and dwarfs, he shrewdly observes, are generally found in company ; and, no doubt, these traditions do look very naturally for their origin to the exaggerated notions of force and bulk on the one hand, and of cunning and ingenuity, making up for want of strength, on the other, which would prevail in states of society composed of feeble slaves and fierce conquerors, the former being generally the aboriginal inhabitants, the latter, conquering invaders. In this way the traditions of Scandinavia respecting their dwarf smiths, builders, and miners, and giant warriors, seem plausibly enough referable to the Finnish aborigines and their Asian conquerors; the former supplying by ingenuity their want of physical strength, and possessing, probably, a greater knowledge of the arts of life than their masters. " These qualities," says our author, " in conjunction with retiring, defensive habits, have, in every region, conferred on such tribes the reputation of mystical properties." Hence we have, he suggests, the Peris and Genii of western Asia, the Elfin of Northern Europe, Screlings, Brownies, and soforth. Respecting these feeble races in all parts of the world where they are commemorated in tradition, this is remarkable, that they are always represented as of swarthy complexions. On the other hand, whether from the design of heightening the contrast, or from traditionary evidence, the portraiture of the

conquering giants has been drawn, with an equally observable uniformity, in xanthous colours.

The next aberrant form noticed by Colonel Smith we should suppose even more questionable, that, namely, of the Aturian Paltas or Flatheads of South America, whose crania, he alleges, not only exhibit the natural type from which the artificial flat heads, formed by compression, are derived, but are furnished with a special " bone of a triangular shape between the two parietals, below the lambdoidal suture, separating the latter from the inferior margin of the squamous part of the afterhead." And this bone, it seems, having been observed in the occipital configuration of a certain infant of Peru, by Dr. Tschudi, has by him been designated the *Os Incæ.* But as remarked by, we believe, Dr. Scouler, in a learned and valuable notice of Colonel Smith's volume in a recent Number of the Dublin University Magazine, this *Os Incæ* of Dr. Tschudi is by no means peculiar to the children of the sun, being nothing more than one of the *Ossa Wormiana* largely developed, as it occasionally is in individuals of all races.

Leaving the children of the sun to seek a human parentage with the rest of Adam's offspring, and before passing to Colonel Smith's weightier conclusions, we would mention, amongst the other abnormal races noticed by him, the Cagots of the south-east of France, the supposed Saracenic stragglers of the Dauphiny, the Chuvash, a very degraded " semi-brute" population of Orenburg in Russia, the Ogres or Gholes of Rajahstan, the Samang dwarfs of the Malayan mountains, and various others, of whom the accounts are too imperfect to enable us to say more than that they are very weak, wretched, and obscure, and exhibit more of the characteristics of the Mongolic or beardless stock than of either of the other typical varieties.

Coming, however, to the main division of his subject, Colonel Smith fixes on three as the number of his typical stocks, because, he alleges, this division satisfies all the extremes of difference in stature and colour; and these three stocks, he insists, have received each a specific centre of existence, meaning by such centre a region of the world so proper to that race that none of the others can there predominate over it. The black nations, for example,

" Multiply on mountain and in morass, in sterile and in rich soil, throughout the tropical region. Though a new locality, like South America, be not their original centre of existence, they spread on both sides beyond the equatorial belt over the lower degrees of the

temperate latitudes; do not decrease in the province of the Cauca-
sian when not overworked by their taskmasters; and flourish under
the fiercest solar heat, when other types of men decay or perish. In
constitution they escape or withstand many of the most virulent
epidemics, amongst the rest small-pox, so fatal to all the American
races; and others incidental to the tropics, or introduced by Euro-
peans, visit them with less violence."

These considerations suggest, naturally enough, notwith-
standing the allowance which must be made for the somewhat
overcharged statements of a sanguine writer, that the equa-
torial region has been, in whole or in part, designed for the
occupation and inhabitation of a black race, and give every
appearance of probability to the theory, that within that region
no superior European power will ever be able to supplant or
exterminate them. Special centres of existence of a like kind
for the other two typical stocks are more difficult of establish-
ment; nor do we think Colonel Smith has succeeded in showing
anything prohibitory of Caucasian inhabitation and propaga-
tion in the seats of the Mongolic families; while the descent of
the Hunnish nations into Europe within comparatively modern
times proves how easily the latter can adapt themselves to the
climate and other conditions of the " centre of existence" of
the Caucasian. We think the case stands confessed as regards
the Negro; but to distinguish the Mongolian from the Cauca-
sian, form, colour, and mental differences are the characteristics
on which alone reliance can be placed. In his indication of
these differences Colonel Smith writes very well and philoso-
phically. Let us take, for example, the moral characteristics
of the Mongolian or Hyperborean type:

" The Hyperborean evinces a feebler innervation than the other
typical forms of man; he is less under amatory influences, less pro-
lific, less enduring in toil, hence more disposed to severity where he
has power ; to a victim or a captive inflicting needless torture, less
from natural ferocity than from the want of individual self-reliance,
which is thus prone to express fear by precaution. More readily
reduced to order when subdued; he evades rather than resists op-
pression by force; he is more obstinate than brave, but savage to
self-destruction when roused by despair; avoiding personal exertion,
such as to walk or to dig unremittingly in the fields, he rides in every
region when the horse is accessible; more imitative than inventive,
he exerts his ingenuity to apply mechanical aids in necessary la-
bours; sitting at work he is dexterous, but little tasteful, at handi-
craft professions preferring patient elaboration to exertion ; lazy,
yet gluttonous, omnivorous with scarcely any distinction; filthy,
amounting to a dread of water; crafty, dishonest, plausible; in war

he trusts to his horse or to numbers; he finds sudden irruption, cruelty, plunder, and desolation, more congenial than open battle and victory.

" With the mind more vacant than contemplative, the religious sentiment, that source of all exalted and practical feeling, has never risen above an indistinct idea of a Supreme Being, a heaven, or a solar worship: it is better satisfied with the true northern impostures of Shamanism, and with the borrowed demon worship engrafted on Budhistic doctrines; for what is of true moral tendency, either in the ethics of Foh or Budh, is of foreign origin, and repugnant to the intellectual puerilities which are his substitutes for reason, philosophy, and science. A deified, ancestral, and paternal obedience stands in lieu of practical religion—his only support that innate moral feeling belonging to all human beings. It is the key-stone of absolute power in the state; hence coercion is the civilization of the masses, ceremonious punctiliousness that of their superiors, ignorant self-laudation the acquirement of literati, and insolence the portion of all. The discoveries they possess in physics are the results of chance; all the maxims of state are immutable, and repressive of progress. Though early in possession of the mariner's compass, and (particularly the Japanese) long compelled to a familiarity with the sea, none of the beardless tribes ever became true navigators or reasoning ship-builders."

In a like indication of the Caucasian characteristics he is equally happy, combining an unusual precision of thought and expression with a high and feeling eloquence:

" The moral and intellectual character we find to be in unison with his structure: the reasoning powers outstripping the mere process of comparing sensations, and showing, in volition, more elevated thought, more reasoning, justice, and humanity; he alone of the races of mankind has produced examples of free and popular institutions, and his physical characteristics have maintained them in social life. By means of his logical intellect, he has arrived at ideas requisite for the acquisition of abstract truths; resorting to actual experiment, he fixed bases whereon to build demonstrable inferences, when the positive facts are not otherwise shown; he invented simple arbitrary characters to represent words and musical sounds; and a few signs, which, nevertheless, denote in their relative positions all the possible combinations of number and quantity; he has measured time and distance, making the sideral bodies unerring guides to mark locality and give nautical direction; he has ascended to the skies, descended into the deep, and mastered the powers of lightning. By mechanical researches, the bearded man has assuaged human toil, multiplied the results of industry, and created a velocity of locomotion superior to the flight of birds; by his chemical discoveries he has modified bodily pain, and produced numberless discoveries useful in medicine, in arts, and manufactures. He has found a sound and

connected system of sciences in general, and acquired a critical li-
terature; while, for more than three thousand years, he has been
the principal possessor of all human knowledge and the assertor of
fixed laws.   He has instituted all the great religious systems in the
world, and to his stock has been vouchsafed the glory and the condi-
tions of revelation."

On the characteristics of the Caucasian we need not dwell
further; but we cannot pass, without remark, a fanciful argu-
ment for the supremacy of this race over the Mongolian, and
of both over the Negro, as well as for the higher antiquity of
the Negro race on earth, drawn from the alleged development
of the human brain in the fœtus and infant.   M. de Serres is
the parent of this surmise.   After tracing the fœtal brain, by a
process with which the " Vestiges of Creation" have rendered
even the popular reader sufficiently familiar, through the gra-
dually developing convolutions of a fish, of a reptile, of a bird,
and of a mammal, he proceeds to ascend in the scale by two or
three other gradations, which we shall express with most
gravity in his own words :

" But although in this progressive augmentation of organized
parts, the full complement of the human brain is thus attained, the
Caucasian form of man has still other transitions to undergo, before
the complete *chef d'œuvre* of nature is perfected.   Thus, *the human
brain necessarily assumes the form of the Negro's, the Malay's, the
American's, and the Mongolian's, before it attains the Caucasian.*   Nay,
more, *the face partakes of these alterations.*   One of the earliest
points where ossification commences is the lower jaw.   This bone is,
therefore, sooner completed than any other of the head, and acquires
a prominence which it never loses in the Negro.   During the soft,
pliant state of the bones of the skull, the oblong form which they
naturally assume approaches nearly the permanent shape of the
American.   At birth, the flattened face, and broad, smooth fore-
head of the infant, the position of the eyes, rather towards the sides
of the head, and the widened space between, represent the Mongo-
lian form, which in the Caucasian is not obliterated but by degrees,
as the child advances to maturity."

If M. de Serres had said that the fœtal head successively
attains to the *volume* of the Negro's, the Malay's, &c., before
arriving at the development due to the Caucasian head, we
might have been well enough inclined to assent ; but what
he alleges, implying an observable difference in form, rests on
no foundation in fact, and its introduction, even in a note, by
Colonel Smith, detracts from the character of his work.   Struc-
tural difference there is none between the brain of one man

and of another; but the difference of volume is, unquestionably, very appreciable; and on this subject Colonel Smith supplies some observations which may be extracted with advantage:

" That the volume of brain is in relation to the intellectual faculties is clearly proved by Dr. Morton's researches, who, having filled for this purpose the cerebral chamber of skulls belonging to numerous specimens of the Caucasian, Mongolian, Malay, American, and Ethiopian (Negro) stock, with seeds of white pepper, found the first the most capacious, and the Ethiopian the smallest; though there may be some doubt whether the Negro crania that served for his experiment were not, in part at least, derived from slaves of the southern states of North America, who, being descended from mixed African tribes, and much more educated, have larger heads than new Negroes from the coast. We have personally witnessed the issue of military chacos (caps) to the 2nd West India Regiment, at the time when all the rank and file were bought out of slave ships, and the sergeants alone being in part white, men of colour, Negroes from North America, or born Creoles; and it was observed, that scarcely one fitted the heads of the privates excepting the two smallest sizes; in many cases robust men, of the standard height, required padding an inch and a half in thickness to fit their caps; while those of the non-commissioned officers were adjusted without any additional aid."

We have ourselves been informed by wholesale hatters, that different sizes of hats are required for different districts, even at home. Colonel Smith goes into further inquiries as to the comparative height, weight, and physical strength of the supposed types respectively. No adequate observations have yet been made on which to ground any certain conclusions in these respects. Assuming it, however, to be the fact that such typical forms of man exist, and have their respective centres of existence so assigned to them, it would appear reasonable to suppose that each should excel either of the others in its own special locality; thus, that a Negro regiment should outmarch a European one in central Africa, and a Tahtar horde endure the vicissitudes of the desert better than a Caucasian one. But we have the Caucasian caravans as patient of toil under the sun of Arabia as the dark nations of the Zahara under that of northern Africa; and the Anglo-Indian army actually excel the Sepoy troops in physical exertion in the climate of India. These speculations, therefore, grounded on the assumption of typical differences, can scarcely be pushed on any side to their conclusions without involving questionable matter. Still less, we think, are the observations which have been hitherto communicated to the public, respecting comparative weight, strength, &c., to be relied on, when

used to discriminate among the mixed sub-sections of individual nations. And we quite agree with Colonel Smith, that, as regards the alleged observations of Quetelet and Forbes, they are to be little depended on. The whole passage, however, is of interest:

" An instrument, the dynamometer, has been invented to measure the relative scale, and they have shown savage nations to be strong in proportion to the abundance and wholesomeness of the food they possess; but in all cases hitherto examined civilized Europeans surpassed them(*a*); and, it appears, English exceeded French; or perhaps more correctly, the Teutonic stock surpassed the Celtic, both in strength and weight, although the Irish Celts are said to be taller and heavier than the English Saxons. As yet, no great stress can be laid on results obtained from an imperfect instrument, partial inquiries, and questionable nationalities; still enough is determined to reject an opinion, often prevalent, that the moderns are degenerate when compared with their ancestors. The conclusion is further controverted by an experiment made at Goodrich Court, where the splendid collection of ancient armour is classified, with rigorous attention both to date and nation, by Sir Samuel R. Meyrick, the enlightened and munificent possessor. Two gentlemen, one of middle stature, with ample chest and shoulders, and the other somewhat taller, but of more slender structure, endeavoured to find armour sufficiently large to fit either one or the other, and failed, in a collection where, we believe, they had a choice of upwards of sixty complete suits of plate, all defensive armour, which, nevertheless, had been worn, in preceding centuries, by chivalry, and persons of distinction, in England, France, Germany, and Italy."

Passages such as the above, abounding in information agreeably conveyed, occur throughout Colonel Smith's work, and entitle it to the character of a useful and popular compilation; but, as an essay of scientific pretension, it wants caution and deliberation, and in point of style it is often loose, and not unfrequently inelegant. We are painfully sensible also, in opening any page, that we must encounter a greater or less number of assumed facts; and, by a fault very common among speculative writers, these assumptions are rarely put in the hypothetic form. Notwithstanding these imperfections, however, Colonel Smith's book conveys, within the compass of a moderate-sized octavo, and at a price accessible to the multitude, a vast amount of matter, put

(*a*) " The strongest North American Indians are asserted to fail against the ordinary power of wrist of Europeans; that is, when each side place the right elbow to elbow, and cross the fingers through each other's hand, striving to bend the opposing wrist back. The fact was established by the 60th Regiment in Canada."

before the reader invitingly, and calculated to direct intelligent minds to a higher contemplation of God through the noblest of his works. One true ethnographic conclusion, indeed, regarding man, as contradistinguished from the rest of creation, appears cheaply worth a whole library of formulas conversant with the tendencies of brute matter, or of zoological classifications of the forms of minor animals.   It is thus that history, in its higher acceptation, embracing all the forms and arts of life, and dealing with the progress of a race of beings, the masters, so far as we know, of all creation here, and destined for immortality hereafter, claims a supereminent and paramount place among intellectual inquiries.   The inducements to studies of this description are not, among us, such as they ought to be. The chief honours of learning are now bestowed on the investigation of laws intuitively discernible, and, when discerned, applicable only to the dead forms of things; laws admirable and sublime, but the knowledge of which gives no man a larger place in the heart or mind of his brother man.   We would desire to see these pursuits made more worthy of the name of humane letters.   To know how many legs an insect may possess, or the number of reticulations on the surface of a leaf, is knowledge, doubtless; but the greatest familiarity with the habits of the lower animals, and with the lower forms of life, cannot alone qualify man for conversation with man in the affairs of this wondrous existence in which we are placed.   While, therefore, we perceive the necessity, for special purposes, particularly among medical men, of an intimate acquaintance with botany, zoology, and the other branches of physical science, we would wish to see the study of man himself, not only in his physical and mental organization, but in his past progress and coming destiny, promoted and prosecuted to a much greater extent than hitherto; and to that end would desire to see not only the aids of observation by weight and measurement and analysis, but the nobler aids of psychological science, of history, and antiquity, more generally resorted to by students in this branch of learning.

The fully-accomplished medical practitioner stands as it were in *meditullio scientiæ :* in the very centre of knowledge ; for, since without health of mind there can be no health of body, and this holds true of the body politic as well as of individuals, the student of the life of man, in its manifestations of health and disease, is truly the student of the world over which man presides, and of the society which is made up of the aggregated minds and energies of men associated in their politic capacity. Yet how rarely is the physician given any voice in the gui-

dance of that machine of which he is to so great an extent the
conservator, and of whose various parts he, of all others, if a true
master of his science, possesses the most comprehensive know-
ledge ?   Even on this subject of ethnology, irrelevant as at
first sight it may seem to the affairs of every-day life which
surround us, the voice of the physician, if attended to amid the
din of politics, might be found to convey warnings which the
statesmen of our day would do well to bear in mind in the course
of their policy.

But there is, unquestionably, another influence, besides
that of climate, which operates in modifying the physical
and moral man,—the influence, namely, of *country.*   What
shall be considered a country in this respect is a question
of extreme consequence to the welfare of mankind; for all
attempts to denationalize such peculiar regions are against the
natural plan of the world, and result in social disaffection and
unhappiness.   Thus there can be no doubt that the efforts of
Austria to Teutonize Italy have been and must ever be out of
harmony with the nature of the Italian constitution, from what-
ever source the population of that country may be derived; for
it is incident to that region to produce a population having a
peculiar national character of its own.   And the influence is
not confined to merely moral characteristics.   The Goth or
Sarmatian, located south of the Alps, acquires a new aspect;
as does he located south of the Pyrenees.   So, in even a more
remarkable way, the American settler, no matter from what
race derived, who fixes himself anywhere between the Missis-
sipi and the Atlantic, undergoes a positive change of form and
feature, as well as new habits of mind; and his offspring, born
and educated anywhere throughout that tract, will be dis-
tinguishable from their kindred in the mother country, both in
aspect and in moral and mental habits.   It appears also at least
doubtful whether a similar specific influence is not exerted
on the inhabitants of our own island, by something altogether
independent of social contagion.   For 600 years the expe-
riment of assimilation between Great Britain and Ireland has
been in course of trial; and, although up to a certain point it
has proved successful,—though the Irish have accepted the
language and social system of the more powerful island,—it
may still be greatly doubted whether they ever will lose the
peculiarities of thought and demeanour which to this day un-
doubtedly characterize and distinguish them.   Whether there
be any virtue in the formulas of social science, sufficient to re-
move these differences, it would perhaps be unphilosophic to
deny; but it appears sufficiently clear that, in the other cases

we have referred to, Nature is not to be put out of her way by any devices of government or legislation; and the reasonable probability is, that here, too, she has decreed some characteristics to be unchangeable and perpetual.

But though the influence of climate, soil, and other such circumstances, must be allowed to exert a specific effect on the human subject,—and up to this point the theory of Prichard, and the other advocates of original identity of race, cannot with candour be denied,—these effects fall very far short of the typical differences which distinguish the great families of mankind from one another. It is observable, also, that such modifying influences operate much more conspicuously on some races than on others. A North American inhabitation of two generations makes little change in a Negro; but an Anglo-Saxon, under such circumstances, undergoes a palpable metamorphosis in figure, in feature, and in mind. Indeed, the Englishman of the present day seems the most susceptible of such influences of the whole European family. Here, in Ireland, he Hibernicizes more readily than the Irishman becomes Britannicised in England. It may be regretted; but the fact, however we may wish it otherwise, presents itself continually to our notice, and challenges the most serious consideration of those who project national reformations by the introduction of new blood.

This quality of the place, if such a quality do indeed exist, may be likened to the singularities of soil, where we often find the products of one district clearly distinguishable from the like products of an adjoining one, though no nicety of chemical tests can detect any difference in its composition. One vineyard yields wine of a peculiar flavour, differing from the vintage of the adjoining one. One farm yields cheese of a quite different quality from that of another; yet between the two is no apparent difference of soil or grasses; and the same wind blows and the same sun shines over both. If our surmise be true, as respects the human product, it would seem that Nature has appointed centres of nationality for the respective branches of each typical stock, as well as more enlarged centres of existence for the stocks themselves. If this, in even a modified way, be so, we repeat, it behoves the rulers of nations to consider well how they attempt anything against Nature.

But as these speculations are among the highest in which the human mind can be engaged, so are they the most difficult. At every step the philosophic investigator must pause and examine his foundations. Rash footsteps here, more than anywhere else, are sure to plunge the wanderer in inex-

tricable error. There are no falser lights, to men engaged in such inquiries, than those held out by spurious etymologies. We see men of good ability and large acquisitions continually misled by the wildest assumptions in this department. See how Colonel Smith stumbles at once into the midst of a morass of follies by taking up with the etymologies of Goropius :

" The Pelasgians left also colonies at Norba, and amongst the Volsci, Hernici, Marsi, and Sabini, tribes having all names and characteristics of a Getic infusion in their dialects, and indications which show, like the first-named in particular, affinity with the Belgic Gauls, chiefly with the Volsci, Tectosages, and Aurunci. The word Volsci, Velka, Wilki, or Teutonic Volka, is generical for "people," and the different tribes had each a particular designation. That of Italy was known by the appellation of Aurunci, from *Awe*, the vale or open country."

We recur involuntarily to Martinus Scriblerus, and the poached eggs of Alexander the Great.

To return, however, to Colonel Smith's general distribution of his subject. We have given an abstract of the arrangement adopted by Dr. Prichard. His classification is more convenient—more consistent, in truth, with our little knowledge—than symmetrical. Colonel Smith aims at a more absolute arrangement, and exhibits his notion of the subject in a diagram here shewn :

NORTH.

FINNIC.

OURALIAN.   AMERICAN.

SOUTH SEA CAUCASIANS.

WEST.   TORKEE.   CAUCASIAN OR BEARDED TYPE.   Thibet, Gobi Desert, and Mountain Chains around them.   MONGOLIC OR BEARDLESS TYPE.   EAST.

N. ATLANTIC.   MALAY.

ETHIOPIC.   HORAFOURA.

WOOLLY HAIRED OR TROPICAL TYPE.

NEGRO.   PAPUA.

SOUTH.
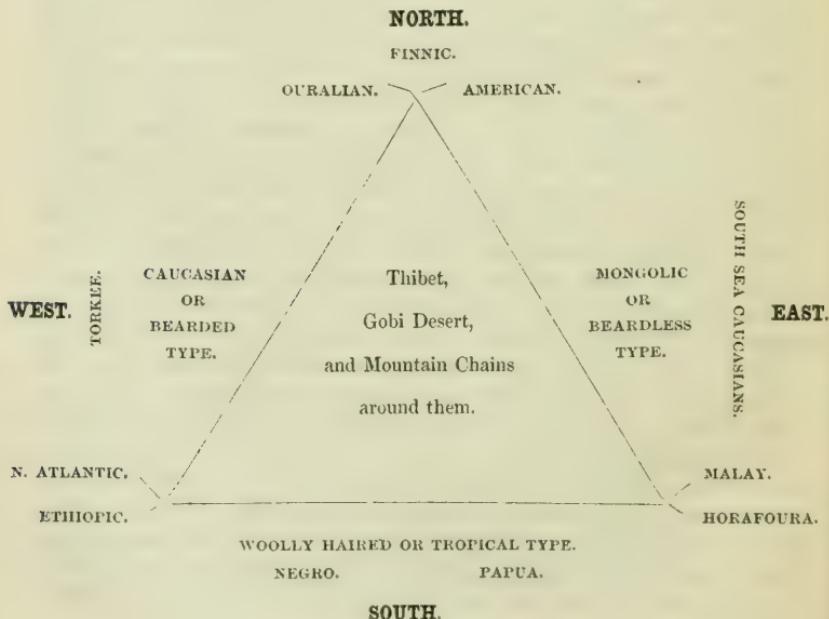
Into the details of the various offsets and affiliations proceeding from these supposed types, and their respective issues, we will not now enter. Colonel Smith, strongly impressed with the idea of centres of existence, deals ingeniously, and, we think, in any case, not uninstructively, with the reciprocal effects of type upon type, and type upon sub-type, where the primitive races overlap and interfuse with one another, or with one another's modified issues. In the midst of much that is speculative, and, doubtless, fanciful, we observe some facts of interest. Let us take one. The Negro receiving the Mongolian(?) innervation (as Colonel Smith expresses it) has a tendency to throw out the hair in a frizzy growth of extraordinary abundance, as exemplified in two portraits of men of this breed, taken (as most of Colonel Smith's illustrative portraits are) from the work of the late Prichard. Crossed by the Caucasian, the Negro's short, woolly locks subside and lengthen into a lanker growth. Are like phenomena observable in other intermixtures?

As we have said, it is not our intention, at present, to go farther than exhibit a general view of the system presented in Colonel Smith's work. As a work of science, it must rank far below that of Dr. Prichard ; yet it deals with the subject more comprehensively, and will probably exert a greater influence in directing other minds into the same channels of research.

And now to descend from speculations, which, whether ill or well prosecuted, lead, at least, to regions more lofty than most others in which the human mind can expatiate, to a very ordinary and commonplace consideration. Mr. Lizars, Colonel Smith's publisher, has adopted a method of binding for his work which we earnestly wish were more generally used. The leaves are cut,—a great facilitation to perusal; but it wants an index,—a great and crying defect. When Curll summoned his authors to take counsel how to overthrow Pope, the indexmaker came with the rest. They would have been a helpless corps without their index-maker. A great book of literature of the sixteenth or seventeeth century would have been held imperfect and deformed if it had not its Index Onomasticus, its Index Topographicus, and its Index Moralis, at the least. Writers aiming at the consolidation and systematizing of all past learning, now give us their volumes without any. But Colonel Smith and Mr. Lizars must be apprised that, however a critic may think it is his duty to read through a book, that he may pass an honest judgment on it, his judgment would be better given, and of more service, if he had the means of collating and comparing, which a good index alone can confer.

On the Treatment of Ulcers of the Leg without Confinement, with an Inquiry into the best Mode of effecting the permanent Cure of Varicose Veins. By HENRY T. CHAPMAN, F. R. C. S., &c., &c.　London, Churchill.　1848.　pp. 156.

A Treatise on the Cure of Ulcers by Fumigation. By GEORGE ALFRED WALKER, Surgeon, &c. &c.　London, Longman. 1847.　pp. 112.

Mr. CHAPMAN states in the commencement of his essay, that a great portion of the contents of this volume was written upwards of four years ago, having been intended to form part of the article on Ulcers in the Cyclopædia of Surgery, and laid aside when that work was discontinued.　His subsequent experience of the treatment advocated having strengthened the conviction he then entertained of its efficacy, the Author encourages the hope that the subject matter may be deemed to possess a sufficiently practical character to justify its separate publication.　In the introductory observations he observes, that the inconvenience attending ulcers of the leg, when treated by means requiring confinement, their prevalence among those classes of society whose very existence depends on a free and vigorous use of their limbs, coupled with the impracticability that not much more than one-fourth of them can be admitted into hospital for treatment, appear to him sufficient motives for calling attention to any plan not *requiring confinement,* which, even if *not* more successful than those hitherto employed, possesses a decided superiority in point of simplicity, cheapness of material, and ready adaptation to the numberless modifications of the disease presented to our notice.

The peculiar characters which distinguish ulcers of the leg occupy the first part of the essay, and the conclusion arrived at is,

"That one trait is common to them all,—a sluggishness or indisposition to heal under treatment, which ordinarily proves successful elsewhere.　It is from this circumstance, and the degree to which they cripple active exertion that they derive their importance; it is this peculiarity, whatever may have been their origin, however various their aspect, which has attracted the attention of surgical writers from the earliest period, and has caused them to be treated of almost as a distinct branch of surgery."

Adopting the definition of ulcers as "suppurating sores which manifest little or no disposition to cover themselves with a cicatrix, it is to discover the sources of this intractability that the attention of the surgeon must be directed, in order to enable

him to decide with confidence upon the treatment best adapted to overcome any given case."

In the next chapter the sources of the intractability of ulcers of the leg are dwelt on, the Author ascribing much to the dependent position of the lower extremity, where the heart and arteries have to contend against gravitation of blood in the veins, and where the circulation, even in health, is scarcely carried on as in other parts of the body, which seems to be proved by the frequent occurrence of varix in these veins; the capillary vessels are accordingly placed under most unfavourable circumstances for conducting the process of regeneration. Mr. Chapman conceives that sufficient importance does not appear to have been accorded by any author to the circumstances in which the capillaries of a granulating ulcer in a depending part are placed by the loss of an elastic envelope like the skin. Nevertheless, although the local obstruction to the circulation caused by the depending position is a principal cause of intractability in the healing of ulcers of the leg, yet the fact that they do not always heal when this is removed proves that other causes may be superadded, viz., constitutional; and, in order to simplify the subject with regard to treatment, the Author divides ulcers of the leg into,

1st. Ulcers intractable from constitutional causes.

2nd. Ulcers intractable from local causes.

In the chapter on the treatment of the constitutional sources of intractability, we find much useful information collected, but as there is nothing novel contained in it, we proceed at once to the chapter on the local treatment of ulcers of the leg, to which the author points with so much confidence.

The local means of treatment on which Mr. Chapman relies are pressure applied to the limb by means of properly adjusted bandages, together with water dressings; but as the author considers that the benefit to be derived from these measures will depend on the manner in which they are applied, we must allow him to speak for himself on the subject:

"In the employment of cold water as a topical remedy in ulcers, at least an equal degree of caution is necessary to avoid the application of too low a degree of temperature, not alone to prevent the extreme consequence which may ensue, the extinction of all vitality in the newly formed structure, but to guard against the vitality being reduced to a degree incompatible with vigorous reparative action. Evaporation ought, therefore, to be controlled, as in irrigation, by enveloping the affected part of the limb in a sheet of oiled silk.

"There is not, however, in these cases, the same liability to reaction, from the irregular action of cold, nor the same mischief to be

apprehended from its occurrence, as in inflammation; on the con-
trary so far from being injurious to the progress of the ulcer, I
am persuaded that the reaction excited by the renewal of the cold
application is a beneficial stimulus to indolent and callous ulcers;
and as the oiled silk is rather calculated to foster this reaction,
at the same time that it guarantees the part from all undue reduc-
tion of the temperature, I never employ cold in those cases without
directing the patient to cover the dressings with an oiled silk en-
velope.

"As soon, therefore, as all inflammatory action has been sub-
dued by emollient and antiphlogistic measures, these may be ad-
vantageously exchanged for cold water dressing and support, ap-
plied in the following manner. The sore being dressed with a
compress of lint dipped in cold water, folded once, twice, or three
times, according to the degree of compression which the surgeon
may deem suitable to the case, three or more moistened strips of
linen or calico, about two inches and a half in width, are to be carried
smoothly round the leg. These strips must be applied precisely in the
same manner as the strapping recommended by Mr. Baynton; the
middle of the first strip being placed upon the back of the leg, with
its upper edge opposite to the lower margin of the ulcer, the ends
are brought round to the front, drawn firmly, and laid down
smoothly, one over the other; the second strip must cover the upper
third of the first, and the same proceeding must be followed with as
many strips as the size of the ulcer may require. Over the strips a
calico bandage is applied, the greatest attention being paid to its
equable adjustment, so that the compression be distributed evenly
over the entire surface, and its amount regulated by the sensibility
of the ulcer. Where the leg is slender, above the ankle, the roller is
apt to fall into plaits, and furrow the skin; to guard against this in-
convenience the hollows immediately above the malleoli should be
filled up with compresses of lint. The whole is then to be soaked
with cold water, and the moistened bandage enveloped with a sheet
of oiled silk, reopening it from time to time to renew the cold affu-
sion. The wet strips of linen adhere to the limb, even before the
application of the bandage, almost as closely as adhesive strapping,
and are capable of affording a support scarcely inferior to that de-
rived from it. If the ulcer secretes abundantly, it is better at first
to repeat the dressings daily, although the lint will absorb much of
the discharge. Very shortly, however, under the action of cold, large,
shining, semi-transparent granulations become compact and red, and
a thin and copious secretion diminishes in amount, and improves in
quality, rendering a daily renewal of the dressings quite unneces-
sary ; and after a time this necessity becomes still more rare. In
several of the cases hereafter recorded, an interval of three, four, or
even five days sometimes elapsed between each dressing, without any
interruption to the onward progress of the ulcer."

The patient during this treatment is allowed to enjoy mode-
rate exercise. When the ulcer is very deep Mr. Chapman fills the

bottom of it lightly with shreds of soft sponge soaked in water, and over these applies the water dressings and roller as before. By many surgeons the author admits that water dressings have been applied, in conjunction with the bandage, to the treatment of indolent and callous ulcers of the leg; trifling, however, as the difference may appear between the modifications described above and the ordinary form of water dressings, the difference of effect, according to his experience, is very considerable. He believes it to possess the advantages without the disadvantages of Mr. Baynton's method. It requires to be renewed less frequently, and he has employed it in preference to all other local treatment in large indolent ulcers, when, from excessive irritability, the sore would not either tolerate cold nor the lowest grade of compression. Mr. Chapman does not, however (it is but right to mention), throw over board other means of treatment, but has recourse to them on particular cases, occasionally using Baynton's strappings, nitrate of silver, solutions of the various astringents, chloride of lime, &c., so as to meet the exigencies of each case; the compresses of lint used in water-dressing being dipped into the solution, and used in the same manner as in the cold water dressing.

In ulcers of the leg in a state of morbid sensibility, the result of the actual lesion of the nerves, as also in ulcers in individuals whose general vitality is low, the Author substitutes tepid water dressings and tepid affusion instead of the cold water dressing.

In alluding to indolent ulcers complicated with a varicose condition of the veins, Mr. Chapman states, that it is against the diseased condition of the veins that the surgeon's efforts must be chiefly directed; and observes that, if the radical cure of the varices cannot be attempted, the only effective palliative by which their injurious influence over the sore can be counteracted is the employment of pressure, either by medium of a tight bandage and compresses along the enlarged veins, or by applying strapping to the limb, as practised by Mr. Scott. But Mr. Chapman seems to be perfectly ignorant of the plan of treatment proposed by the late Professor Colles of this city, and found so useful as a palliative mode of treatment of varicose veins, viz., the vein truss, now so well known in this country as "Colles's Vein Truss." This omission is the less excusable on the part of Mr. Chapman, who professes to come before his brethren with all the recent information on the subject before us, inasmuch as the advantages of Mr. Colles's instrument have been placed before the profession in the first volume of the lectures of that eminent surgeon, which have

been recently published. The following observations we have taken from our notes of a lecture delivered on the subject of varix by the late Mr. Colles. After some lengthened remarks on the danger and failure of the different modes of treatment proposed for the radical cure of varicose veins, he says:

" As it appeared to me that the grand object in the treatment of varicose veins was to obliterate the caliber of the vein, it struck me that this object could be attained by means of simple pressure. I tried at first pressure on the vein at the inside of the knee, or a little lower down, but this was attended with much pain. I then tried pressure where the saphena vein dips down to join the femoral vein in the groin, and I found it to answer all my purposes. In these cases I now employ a small truss called the ' vein truss,' shaped like that for inguinal hernia, but of course much smaller; the pad is applied to the trunk of the vein, the strap being buckled round the buttock: you will find it very difficult to get the patient to keep the truss on the right place at first, but this we can prevent by marking out the proper spot for him. This plan has succeeded admirably with me, and the more I use it the more I am convinced of its utility: it need not be worn at night. This instrument is also applicable to pregnant women with varicose veins, who are subject to bleedings from these veins. I have seen some of these patients quite exsanguinous from the loss of blood in this way, and, by the application of the vein truss, the bleeding was arrested; when delivery takes place they may put the instrument aside."

In concluding our remarks on the chapter devoted to the treatment of ulcers of the leg, we must, in justice to Mr. Chapman, say that we have read it with much pleasure; and although the author does not assume to himself credit for originality in proposing water dressings and compression to certain forms of ulcers in the leg, yet we are of opinion that he has done much by directing the attention of the profession, especially the junior members, to the advantages of this combined treatment, a practice we have been familiar with for years, but which we have not applied precisely as recommended by Mr. Chapman. However, since we first read the essay before us, we have used the compress, straps of linen, and roller, adjusted as directed by Mr. Chapman, in two cases of ulcers of the leg, and we have found them to answer admirably well.

In the chapter on the *Radical Treatment of Varix* a review is given of the different operations which have been proposed for the permanent cure of varicose veins, together with the objections to which most of them are liable; and, after a brief allusion to the treatment by ligature, Brodie's method by subcutaneous incision, Velpeau and Jobert's treatment by pins and

twisted suture, and the treatment by caustic, Mr. Chapman proceeds to notice the method of cure by galvano-puncture, and says:

"Since the possibility of coagulating blood circulating in an aneurismal sac by the medium of galvanism has been established, the same principle has been extended by Italian surgeons to the cure of this disease (varix) of the vascular system."

The author then gives an account of MM. Bertani's and Lamberini's experience on the subject, but he has had no practical experience himself in the matter. We need not give the details of the cases reported in favour of this treatment, but the Author in conclusion very judiciously remarks: "Whether the cure is more permanent than by the other modes of obliteration remains still to be established, since no direct evidence has yet been adduced on this point." In fact the information we at present possess on this subject is anything but satisfactory. Its advocates state that it obliterates the vessel, and is free from danger ; but the well-known fact of the return of the disease after the apparent obliteration of the vessel by other means obliges us to withhold our opinion, until the superiority of the galvano-puncture over all other methods of treating varix is satisfactorily proved by the permanency of its effects.

From the perusal of Mr. Walker's book we have derived but little useful information. The author relies on the application of the fumes of sulphur and iodine to the surface of the ulcer, and adjacent tissues, through means of an apparatus which he has constructed for the purpose. The apparatus consists of a series of mahogany boxes, having in the cover a round aperture for the reception of the limb, each box communicating below with the engine room of *his establishment.*

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1. *Contributions to the Pathology of the Kidney.* By WILLIAM T. GAIRDNER, M. D. Edinburgh, Sutherland and Knox. 1848. 8vo. pp. 54.

2. *Transactions of the Royal Medico-Chirurgical Society of London.* Volumes XXIX. and XXX. 8vo. 1846–7.

3. *Cyclopædia of Anatomy and Physiology.* Edited by ROBERT B. TODD, M. D., F. R. S., &c. &c. London, 1848. Part XXXII. Article, Ren.

OUR Readers may remember our recent promise to give some account of the remarkable investigations which have been lately

so successfully carried on in London and Edinburgh into the minute pathology of that ill-understood organ, the kidney. That promise it is the object of this article to redeem.

Great as the actual fruits of these investigations have already been, we have good reasons for considering them but as the commencement of a series of researches, the tendency and sure result of which will be the clearing up of one of the most obscure recesses in pathology. We believe the author of the article " Ren" in the Cyclopædia of Anatomy, upon which we have already bestowed high praise, has not spoken too sanguinely in " predicting that, within a very short space of time, the diseases of the kidney will be more completely and generally understood, with reference to their pathology, diagnosis, and treatment, than those of any other organ."—p. 263. It is worth while to inquire the grounds upon which Dr. Johnson has founded this prediction; they are:—1st, that there is no important organ in the body whose minute structure is so well known as that of the kidney; 2nd, that the products of disease in that organ are brought more completely under our daily observation than those of any other, inasmuch as its morbid deposits and accumulations occur, almost without exception, in such a situation that portions of these materials are being continually washed out by the passage of the fluid secretion over the canals in which they are contained. These form a good basis upon which we may safely build our hopes and predictions of greater enlightenment in these pathological obscurities. Yet how little does the vast mass of medical practitioners appreciate the importance of an accurate knowledge of the minute structure of the kidney, or of any other organ! How rarely do we see anything approaching a careful examination of the urine or any other secretion! Mayhap we may find, here and there, an hospital physician examining the urine for albumen, and this is about the sum total of his examination, as if pus, epithelium, mucus, spermatozoa, tube-casts, oil granules, and blood corpuscles, were pleasant fictions, about which a Gairdner or a Johnson may amuse learned societies, but which concern not the practical man. But this is not more nor less than a serious error, a criminal neglect of those resources which the advance of science has brought to the aid of the physician for the discrimination of disease. We know there are men, and such men will be always met with, who laugh at such things as " silly minutiæ," " refining too much," " making distinctions which nature has not made," and so forth ; but we can assure the objector in good sooth, that it is no trifle to be *quite certain*

that your patient has spermatic discharges; that it is no very unimportant refinement in knowledge to be aware that your scarlatina patient is passing undeveloped epithelium before the manifestation of the slightest derangement in the general system; that it is somewhat satisfactory to be able to assure a sufferer that he is *not* labouring under what, in our present state of advancement, appears to be a necessarily fatal disease, but under one in which a cure is possible. These are the solid benefits of the *new* pathology, so much sneered at by the *soi disant* pathologists of an obsolete school, but which has already reclaimed many a sterile tract in long uncultivated fields; benefits which, permanent advantages in themselves, have the still greater merit of being *essentially reproductive.* Scientific discoveries are the producers of further scientific discoveries. The cell of the Bovista giganteum not more surely or more rapidly begets its like, than a great advance in science begets similar great advances. This is almost a truism. How easy and natural the transition from Franklin to Faraday, from Laennec to Stokes! We know that to the medical trader, the man who considers his duty performed when the fee is pocketed, the facts we are about to bring before our readers will be mere curiosities, all very well to be sought after and talked about by medical virtuosos, but by no means of general practical utility. To these we can only say, our duty is performed. We, in our critical and not *irresponsible* capacity, have inducted them into the choice wares of the science they profess to cultivate. The crime of their rejection be on their own heads.

In the publication we have placed at the head of this article, Dr. Gairdner has made his first appearance as an author. It is not too much to say that it is one of the most important monographs on the special pathology of an organ we possess. It is an invaluable addition to medical science, and reflects the utmost credit not merely on its author, but on the great and rising pathological school of which Dr. Gairdner(*a*) is already so distinguished a member. As we shall have very frequent occasion to bring this essay before our readers in the course of our analysis, we shall now proceed to enumerate the remaining sources from whence our facts will be drawn. First in point of time and intrinsic importance, is the paper by Dr. Johnson in the twenty-ninth volume of the Medico-Chirurgical Transactions, entitled, "On the minute Anatomy and Pathology of Bright's Dis-

(*a*) We are glad to find that, by the recent appointment of this gentleman as pathologist to the Royal Infirmary, he will have extensive opportunities of prosecuting his researches.

ease of the Kidney, and on the Relation of the renal Disease to
those Diseases of the Liver, Heart, and Arteries with which it is
commonly associated."   There can be no doubt that this now
celebrated paper has effected an important change in our views
of the intimate nature of Bright's disease, and that to it mainly
are to be attributed the careful researches of succeeding wri-
ters; nor are we about to quarrel with Dr. Johnson that he
was anticipated in Germany, as far as his chief facts were
concerned.   There can be no doubt that he was ignorant of
what had been done by the German workers in the same
field of labour, and who, by the way, appear determined to
do everything in the pathological field; and equally, we presume,
there can be little doubt of the truth of his own assertion, " that
his views differ essentially from those of any preceding observer."
In subsequently placing to his paper an appendix, in which he
indicated the various productions of the German pathologists
bearing upon his own observations, Dr. Johnson made a con-
cession to the critics as graceful as it was politic.   Though we
may be allowed to state our surprise that the Royal Medico-
Chirurgical Society of London—the medical St. Stephen's—
contained no member on the night of June the 8th, 1845, who
had heard of Gluge of Brussels, or seen his renowned " *Atlas
der Pathologischen Anatomie.*"

In the same volume we find a paper from the well-known
pen of Mr. Toynbee.   Of this we shall have but little to say.
It certainly does not sustain the character acquired by that
gentleman for his early investigations into minute structure.
All who have succeeded him disagree with the views pro-
pounded in the paper, and we fully believe he is equally at
issue with nature,—here, as elsewhere, a fatal antagonist.

In the thirtieth volume there is a paper by Mr. Simon, the
accomplished author of the " Essay on the Thymus Gland,"
on " Subacute Inflammation of the Kidney."   This is a truly
original and beautiful paper.   It is rare, indeed, to find elegant
scholarship and profound pathological attainments united in
the same individual so richly as in this gentleman.   We are as
much charmed as surprised to find the abstrusest parts of what
we have been accustomed to term *dry* pathology handled in so
original and agreeable a manner.   We are aware that Mr. Simon
has been recommended by some critics to prune his ornate and
luxuriant style.   We, on the other hand, would advise him
still to present us with deep pathology treated with something
approaching literary taste,—a rare merit these days.

Immediately following Mr. Simon's paper we find another
by Dr. Johnson, " On the inflammatory Diseases of the Kidney,"

which agrees in its main features with that of his then col-
league, Mr. Simon ; the latter circumstance, perhaps, accounts
for their similarity, but they differ in many important particu-
lars. In the thirty-second part of the Cyclopædia is contained
the conclusion of Dr. Johnson's elaborate article on the kidney,
which we brought before the notice of our readers in our last
Number. This, the pathological portion of it, contains a
somewhat sketchy *resumé* of the author's researches, contained
in the two papers to which we have just referred.

We shall take Dr. Gairdner's essay as the basis of our ob-
servations, not merely because it gives the most complete ac-
count of the entire pathology of the kidney, but because, from
the systematic arrangement adopted, it will enable us to bring
the various facts bearing upon this hitherto obscure subject
more conveniently before our readers ; though we shall have
constant occasion to refer to his collaborateurs in the same pa-
thological field.

The essay opens with an excellent though brief account of
the vascular system, tubuli, and parenchyma of the kidney.
The condition of the vascular system has been minutely de-
scribed by the earlier investigators of Bright's disease ; but it
must be confessed that their researches conduced but little to
a satisfactory knowledge of the complex conditions implied in
that name. Indeed, as Dr. Johnson has well remarked, this want
of success may, perhaps, be attributed to the fact that the inves-
tigations referred to were made "with a certain preconceived
notion on the subject, which has induced them to direct their
attention too exclusively to the vascular system of the gland,
while they have neglected the study of other portions of the
organ, which, there seems reason to believe, are primarily and
essentially concerned in the disease"(a). Yet it is certain that
a right apprehension of the true condition of the vascular sys-
tem is quite necessary as a preliminary to *all* ideas on this sub-
ject. We think the exact description of Dr. Gairdner will go
far towards giving a somewhat definite notion of this part of
kidney pathology, and tend to take away Mr. Simon's reproach,
that "slight congestion" of the kidney" is the vaguest of all
vague records which the case-book contains. It is Dr. Gaird-
ner's opinion that the abnormal character of the vascularity is
most important, as leading us to detect disease of the organ.
The abnormal character may exist in the venous or in the ar-
terial system, and in either case has certain distinctive marks,
whereby the particular system implicated may be discriminated.

(a) Med. Chir. Trans., vol. xxix. p. 2.

The veins are disposed chiefly in two situations, viz., on the surface, and in the substance of the pyramids. On the surface they form a peculiar network, visible with the naked eye, first minutely described by Ferrein, and to which Drs. Gairdner and Johnson have paid particular attention. The general distribution of these veins is *stellate,* enclosing by their intersections small pentagonal spaces, in the interior of which the natural pale colour of the cortical substance appears, about the size of a very small pin's head. The condition of this superficial venous plexus varies greatly with the degree of fulness of the general venous system; it may, therefore, be perfectly anemic, or, on the other hand, in the highest degree of distention, in correspondence with such variations in that system. So far we have seen nothing to indicate a *special* state of the kidney; but Dr. Gairdner goes on to remark, that

" Great irregularity of injection, amounting to *marbling* of the surface, and great increase in the size of the stellar vessels, are generally tokens of disease, as they are the result either of partial obliteration of the venous network, or of the extrusion of the blood from it, through over-distension of the loops of tubuli which form the intervening pale spaces."—p. 3.

This is an important observation, which should be impressed upon the mind of the anatomist. While there are certain general conditions, not to speak of mere gravitation, which greatly affect the appearance of the kidney as a vascular organ, the irregularities described by Dr. Gairdner indicate special states of the utmost importance.

Our author next proceeds to describe " the engorgement of the capillaries and Malpighian tufts," which gives rise to two conditions: first, a generally diffused heightened colour of the cortical substance; and, second, increase and greater distinctness of the vascular striæ running from the base of the pyramids to the external surface. This latter species of injection, we are informed, often exists to a great extent without any corresponding injection of the rest of the kidney, and sometimes the red points composing the striæ are so much increased in size as to form considerable petechiæ, in which case the petechiæ usually extend to the surface, occupying the intervening spaces of the venous polygons(*a*). The true nature of these petechiæ has been the subject of much debate; but since

(*a*) These petechiæ were extremely common during the late scurvy epidemic. We remember a case in the Meath Hospital, which exhibited them to a remarkable extent. So intense was the disposition to hemorrhage in this case that the areolar tissue around the kidney was infiltrated with blood.

the investigations of Bowman, as minute as they were original, there seems to be no longer a doubt that extravasation into the tubuli uriniferi is the cause of this appearance. This seems agreed upon by all the writers whose papers we are analysing. The simple fact that the Malpighian bodies do not exist on the surface of the organ would be quite sufficient to disprove the idea of Rayer, and which is, we believe, the common idea, that vascular injection and hypertrophy of these bodies are the causes of the petechiæ. The size of these spots, and their irregularity, equally negative that notion; while the positive results of artificial injection of the tubuli in the hands of Mr. Bowman put it beyond doubt that these latter structures are the true locality of the spots seen on the surface. On the other hand, we may find the cortical substance blanched and anemic. There may be *no trace* of red colour, or there may be a mingling of a uniform light rose-colour with the characteristic pale yellowish tint of the renal substance, while the vascular points indicating the Malpighian bodies(*a*) are faintly visible. These conditions may co-exist with great vascularity of the surface and pyramidal bodies, where, as we have already observed, the veins are principally distributed. What are the causes of this blanched state of the kidney, on which Bright and all succeeding observers have laid so much stress? Here we find again the influence of general conditions of the system acting upon the vascular state of the kidney. Anemia is frequently the source of this appearance, as known to every one who has made even a few *post mortem* examinations. But the chief cause of this decolorization of the cortical portion of the organ is the occurrence of *abnormal deposit*. Rayer distinctly recognised that inflammatory diseases of the kidney are the most general causes of this decolorization, and has made a remark of great general pathological interest, as quoted by Dr. Gairdner, that both

"In the anemic and hyperemic conditions of the organ, the partial character of the vascularity is much more decidedly indicative of the presence of a morbid product, than its absolute amount."— p. 4.

We should, *à priori*, expect that deposit in the tubes would affect the Malpighian bodies, whatever may be their exact con-

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(*a*) We think it useful for the information of those of our junior readers who are beginning the study of the kidney, to observe that the Malphigian bodies are visible with the naked eye on very thin sections, appearing as red points scattered over the surface of the section. A pocket lens renders them very distinct.

nexion with those structures, a question into which we shall
not now enter. When we consider the firm character of the
fibrous investment of the kidney, and the relations, whichever
theory we may adopt, of the Malpighian glands to the tubules,
we cannot come to any other conclusion than that sudden en-
gorgement of the secreting portion must, even in health, be at-
tended or followed by the diminution of its vascular supply.
And Dr. Gairdner's inquiries have led him most absolutely to
the opinion that this actually takes place, an opinion with
which our own observations completely concur. Here he is
so utterly at variance with the London pathologists that we
must quote his own words:

"In such cases (namely, of decolorization of the cortical sub-
stance) the Malpighian coils of vessels, which, in a strictly normal
specimen, may be observed filling the capsule, particularly towards
its circumference, with red injection, are pale, bloodless, and com-
pressed, sometimes maintaining their rounded form, at other times
more or less angular."—p. 4.

As well as morbid deposit, Dr. Gairdner is of opinion that
accumulation of their own secretions in the tubes can cause
this condition. Here we have a question of great practical
importance. Mr. Simon believes the products of inflammation
have the effects upon the bloodvessels described by Dr. Gaird-
ner; in this state, he informs us, numbers of the Malpighian
bodies are extinct for all purposes of secretion; their vessels
obliterated, their capsules wrinkled round them; they are
dwindled, opaque, and bloodless. But Dr. Johnson, in refer-
ence to the most common of all the forms of exudation into
the kidney, fat, is of opinion that the Malpighian bodies
are in a state of congestion in this condition. Here we
find, as we have just observed, Drs. Gairdner and Johnson at
direct issue. Of course this is a matter to be investigated but
in one way, by actual observation. We firmly believe Dr.
Gairdner's doctrine to be correct, and the source of our belief
is frequent and careful observation. Nevertheless, Dr. Johnson
has given some *reasons* for his views, which may be profitably
discussed, though by so doing we are rather anticipating the
course of our analysis. It will be seen at once that this is a
question of considerable moment, when we state that Dr. John-
son founds his explanation of the presence of albumen and
blood corpuscles in the urine, upon the very circumstance
assumed, that the presence of exudation in the tubes neces-
sarily causes congestion of the Malpighian plexuses. Authors
have long wanted something like a reasonable doctrine upon
this subject. No wonder, therefore, that the views of Dr.

Johnson are already incorporated with the language of medicine(a). We must premise, and we say it with no offensive wish to cavil, that a suspicion naturally arises in our minds that Dr. Johnson's reasonings and *observations* were not a little biased by already known facts: the problem was, to explain the existence of albumen in the urine, in Bright's disease; but for this *fact*, it is certain that we should not have had the explanation, probably we should have equally wanted the observation upon which it is founded. We shall quote Dr. Johnson's own words on this point:

" The fat accumulates in the epithelial cells to such an extent as to produce engorgement and dilatation of the cells, and of the tubes which are lined by them; the consequence is compression of the capillary plexus surrounding the tubes, giving rise to congestion of the Malpighian plexus. This passive congestion of the Malpighian plexus leads to transudation of the serum of the blood, and sometimes to rupture of the delicate vessels of the plexus, and the consequent escape of the colouring matter and fibrin of the blood. These constituents of the blood pass into the tubes, and so become mixed with the urine. Their escape from the blood-vessels is the result of a mechanical impediment to the return of the blood consequent on compression of the veins by an accumulation of fat in the tubes"(b).

Did it never suggest itself to Dr. Johnson that the same exudation which compresses the capillary plexus surrounding the tubes may also compress the Malpighian glands? Nay, the afferent arteries(c) which feed those glands ? Dr. Johnson knows quite well that the afferent artery and efferent vein penetrate the Malpighian capsule *close to each other*. Cannot a " pressure from without" act with equal force upon both vessels; and thus, instead of producing *congestion* of the Malpighian vascular system, cut off at one blow its entire vascular supply ? For it must be remembered that there is no inosculation of the afferent arteries of the Malpighian bodies with each other. Each body has its feeding artery; cut off that supply and the condition is present which is alone necessary to effect its dwindling and atrophy. While, on the other hand, the " portal plexus" of the convoluted tubes offers one of the finest specimens in the body of vascular anastomosis; the vessels composing this plexus breaking up into innumerable ramifications immediately upon leaving the efferent vein, which, like the afferent artery, does

(a) Vide last edition of the classic works of Prout and Watson.
(b) Med. Chir. Tran., vol. xxix. p. 6.
(c) Vide article " Ren," in The Cyclopædia of Anatomy.

not itself anastomose with adjoining vessels. We certainly can understand that pressure upon *this* plexus may be spent upon neighbouring plexuses, and, therefore, not be transmitted, or if so, very slightly in a retrograde direction,—namely, to-wards the Malpighian system of vessels. All pathological analogy favours this view. From Dr. Johnson's description we irresistibly get the idea that the Malpighian bodies lie all in one plain at the terminations of the tubes, like a row of Meibomian glands; and, that therefore, they cannot be affected by lateral pressure from abnormal exudation. But no one knows better than that gentleman the absurdity of this notion.

Dr. Johnson observes, that mechanical obstacles to the circulation through the heart or lungs may give rise to venous congestion, dropsy, and albumen in the urine; and that in two cases, to which he refers, there was congestion of the Malpighian bodies. Although we were unable to see the exact relation of this observation to his argument, we were certainly not fully prepared for what follows in his statement, that in neither case was there a trace of any organic disease of the kidney ! Why this is the whole gist of the question : it was because there was no deposit in the tubes that the general venous obstruction re-acted upon the Malpighian plexuses. If Dr. Johnson had examined the choroid membrane, or the vena salvatella, he would have found the same conditions. To come to a definite conclusion upon this point, we must examine a case presenting the combination of great obstruction at the central organ of cir-culation with marked exudation into the structures of the kid-ney. Here Dr. Gairdner comes to our aid. His sixth observation is a case of hypertrophy of the heart, with incompetency of the aortic valves, offering such obstruction to the circulation that the lungs were found " to be extensively studded with hemorrhagic extravasations." The kidneys offered the following appear-ances :

" The vascular striæ opposite the bases of the pyramids were distinct, the vascularity of the capillaries, and the Malpighian bodies not appreciable. The cortical substance was slightly and minutely mottled ; the striæ of the pyramids, from their bases through two-thirds of their length, were masked by the presence of a white opaque deposit. The greater part of the deposit proved to be granules and globules of fat, which appeared to fill the tubes in every part of the organ; it was mostly unconnected with cells. The epithelium was very imperfectly developed, many of the nuclei being free."

In this case the urine was albuminous. But we have a di-rect statement of Dr. Gairdner's upon this question :

" A moderate or small amount of exudation, however, sometimes occurs in organs which present considerable vascular injection, and sometimes even a distinctly hyperemic condition. Such cases occur not unfrequently in the latter stages of heart disease. In only one or two cases have I found the vascularity much greater than usual. In these the kidneys were of large size, and contained very little exudation."—p. 38.

Dr. Gairdner indeed considers that the amount of exudation bears pretty nearly an inverse ratio to the congestion. In the very early stages of the former we find the kidney congested; but exactly as the morbid deposit increases so does the vascularity diminish. This last author has given a description of " partial distribution of the oleo-albuminous exudation"(*a*), which is greatly opposed to the views we are controverting. In this condition we observe small irregular patches of a pale colour, having an abrupt boundary by being marked off from the surrounding renal substance by a vascular ring. The pale patch, examined microscopically, presents the combined states of exudation to a great amount into the tubes, and depleted Malpighian bodies; while the vascular ring exhibits these latter in the highest state of congestion. This is an extremely interesting proof of the antagonism of *great exudation* and vascular congestion. We may remark, too, that Bright, Rayer, and all other observers agree in figuring and describing the granular kidney *as pale*. This is a great fact, which Dr. Johnson would do well to ponder over(*b*).

What then is the origin of the albumen in the urine in fatty kidney ?—of the same element mingled with blood-corpuscles, epithelium, and fibrinous masses in the " desquamative nephritis" of these authors ? Mr. Toynbee, and, we need scarcely add, Dr. Johnson, believe the presence of albumen in the urine depends exclusively on *obstruction* and congestion of the vessels of the organ; but the former observer considers congestion an antecedent to the other stages of the disease, and agrees with Dr. Bright, that " that condition of the blood-vessels does precede, and that necessarily, the deposition of fat, the enlargement of the organ itself or of its uriniferous tubes, or of any other of its vessels," a view supported by all pathological analogy. Dr. Johnson, in his first paper, found sufficient reason in the fat-

(*a*) *Plaques Blanches de Lymphe Plastique* of Rayer.
(*b*) We have not space to go further into this discussion, but we cannot help recommending an experiment to Dr. Johnson, which will be an *experimentum crucis* on the question. Let him perform Dr. G. Robinson's experiment of tying the renal vein in rabbits, after having exposed them for a certain period to the causes of scrofula, and so produced fatty deposits in the tubes of the kidney.

exudation for the presence of albumen ; and at that time he allowed the name of " Bright's disease" to *that state* alone, and which, dogmatically enough, he describes as being " primarily and essentially an exaggeration of the fatty matter which exists naturally in small quantities in the epithelial cells of the healthy organ ;" and in his second paper he considers the anatomical elements of " Desquamative Nephritis" sufficient, by their obstruction to the circulation, to produce albumen in the urine. But we think our readers will find in the first of these papers sufficient evidence of a truer doctrine, namely, that albumen is a process of *secretion*, of abnormal nutrition on a mucous surface, and therefore patent to our observation in the urine.

" Exposure to wet and cold, and the consequent suspension of the cutaneous functions, may give rise to congestion of the kidneys, scanty, albuminous, and bloody urine, and dropsy."—p. 16.

Supposing the morbid action to attack the bronchia, we find no difficulty in understanding the *albuminous* products of a genuine inflammatory process *here;* and until pathologists give better reasons than Dr. Johnson has yet vouchsafed to us, we shall not believe the process in the one case to differ from the process in the other.   But, says this gentleman, we have in the kidney a complex system of tubes offering, by their minuteness and number, obstruction to the passage of their own hyper-secretion, when plugged with fat or their own epithelium. Now having already a sufficient *cause* for a certain phenomenon, it appears an infringement of philosophical precepts to set up the existence of *another* cause for the same phenomenon.   That we have sufficient *cause* for the presence of albumen in the urine, without assuming the existence of obstruction of the Malpighian plexuses, we have, perhaps, given already sufficient proof ; but we must again quote Dr. Johnson against himself :

" It is very generally believed that Bright's disease may have its origin in an attack of dropsy supervening upon scarlatina.   It seems to me that this notion must be accepted with some modification.   I have lately had an opportunity of examining the kidneys of three patients who died after an attack of scarlatina. In two of those cases there was albuminous urine, and in one there was dropsy; but in no case did the kidney present any of the characters of Bright's disease.   In one there were no morbid appearances whatever ; in a second, there were unequivocal *products of inflammation ;* and, in the third, there was great congestion, with blood in the tubes, and other appearances which seemed to indicate an increased amount of functional activity."—p. 16.

It is unnecessary to enter into any analysis of this paragraph.

Sufficient that in one case there was no trace of organic disease; in another, unequivocal products of inflammation; in a third, " functional activity," which would, perhaps, have been termed something else by another pathologist; for, says Mr. Simon, " no interstitial effusion of lymph need exist in a gland to warrant us in accounting it inflamed; its inflammation may consist simply in functional derangement, and, during life, may be recognised only by admixing its albuminous products with those of normal secretion." We give that name to the case where a superfluous blastema becomes commingled with the secretion, as in active albuminuria, or undergoes interstitial development, as in cirrhosis of the liver; the term inflammation is applied with equal accuracy to both conditions. Dr. Gairdner appears to agree with Mr. Simon that the albumen in Bright's disease is, like sugar, a *secreted product;* but he has not offered a decided opinion on this point; though, having thrown aside Dr. Johnson's ideas, it is difficult to see to what other he can turn than that we have been defending. That the presence of oil in the cells of the kidney, even to an immense extent, does not necessarily entail the presence of albumen in the urine we have the testimony of Mr. Busk(*a*), who has observed undue secretion of oil by the kidney to a very great extent without the concurrence of albumen in the urine, as in certain cases of jaundice; and, contrariwise, albuminuria and all the phenomena of suppressed secretion of urine may exist, without any oil being discernible in the tubuli uriniferi. We have good reason for stating that Dr. Gairdner has made observations similar to those of Mr. Busk on the supposed connexion of these phenomena. Indeed we think it almost certain that the albumen of Bright's kidney bears precisely the same relation to the tube-casts of desquamative nephritis, as the ordinary products of catarrh bear to the false membranes of croup. The latter part of this analogy Mr. Simon has stated in direct terms. But we must leave the further discussion of this interesting question, and hasten to other parts of our subject.

Of the pathological elements of the kidney Dr. Gairdner considers first, as the commonest and simplest of all, *exudation.* He makes two sorts of division of exudation: first, as to its *locality,* whether within the tubes, within and around the Malpighian bodies, or in the inter-tubular tissue; secondly, as to its *nature,* crystalline (saline), oleo-albuminous, or purulent. It will perhaps be more convenient to discuss first, the less common and more unimportant of these divisions. Exudation is occasionally ob-

(*a*) Med. Chir. Trans. vol. xxix. p. 275.

served within the capsules of the Malpighian bodies, but this is by no means a common occurrence. Dr. Johnson constantly remarks upon the clearness and transparency of these bodies, while the tubes are filled with exudation; and while Dr. Gairdner describes its presence in this situation, of which he has given an excellent figure (fig. 9), he admits that it may occur within the tubes to a great extent, without at all involving the Malpighian bodies. When existing in large quantity, the tuft of vessels which normally fills the capsule, is completely compressed and shrunk, and in most cases invisible.

Dr. Gairdner speaks more doubtingly of exudation into the inter-tubular tissue: in the plate just referred to, this appearance will be seen figured. Mr. Simon disbelieves altogether that interstitial effusion effects much towards the final contraction of the kidney, which he thinks is consequent on a prior absorption of the intervening tissue. The meshes of the matrix come nearer together, and there is in a given space an excess of fibrous tissue, because the material, which originally expanded that matrix, is withdrawn.

We must premise a few observations upon the *crystalline* and *purulent* exudation before passing to the consideration of the most important locality of exudation, which will form the principal subject of our remarks.

One of the most original and instructive parts of the Essay before us is that treating of the " crystalline or saline matters deposited from the urine after secretion." Dr. Gairdner observes, that though frequently occurring as a sediment in the urine out of the body, urate of ammonia is no less frequently deposited from the urine contained within the tubes of the kidney. In most cases this is a post-mortem appearance, consequent upon the cooling of the body; occasionally, however, it is found in such quantity as to present to the naked eye the appearance of a distinct deposit. In these cases the cortical substance appears occupied by a white, or yellowish-white opaque deposit, very obvious also between the vascular striæ of the pyramids, particularly in the half nearest the cortical substance. This condition is consistent with a perfectly healthy state of the organ. The deposit is characterized by its ready solubility in dilute acids,—the acetic or nitric. Under the microscope it presents the appearance, when within the tubes, of a fine molecular shading, which entirely obscures the nuclei. That part of it which floats free is composed of molecules and granules, amorphous, angular, or approaching a circular form, but never accurately rounded. A great amount of this deposit may produce a distinct morbid condition of the kidney: in observa-

tion 2 we find a case of this kind. Both kidneys were tolerably firm in texture, the venous network of the surface was well injected, and the veins of the pyramids were in some parts full of blood; the cortical substance contained little blood; the vascular striæ and the Malpighian bodies were obscure. Here the tubes were completely filled with an opaque matter, which obscured the nuclei, and presented the appearances just described. The whole of this amorphous deposit was dissolved by adding a drop or two of dilute acetic or nitric acid. The Malpighian bodies were mostly destitute of blood. It is the more important to apply the tests mentioned to this kind of deposit, as it is frequently met with in connexion with fatty exudation, and, therefore, by their means we can judge of the relative proportions of these morbid elements. For further information upon this form of deposit, and more strictly crystalline deposits within the tubes, we must refer to the essay itself.

Pus-exudation will not long detain us, as, though a serious lesion, it is too uncommon to be a matter of much practical importance to the pathological inquirer. The most usual form, we are told by Dr. Gairdner, in which this exudation takes place, is that of small abscesses, rarely exceeding the size of a pea, irregularly disseminated through the cortical substance. The formation of abscesses having a distinct limiting membrane, or surrounded by condensed tissue, is, however, of extremely rare occurrence. Dr. Gairdner relates a case in which abscess of the kidney was found, together with purulent deposits in the lung. Probably in this case the abscesses had their origin from the general tendency to purulent deposit; but Dr. Johnson, under the head of acute suppurative nephritis, has given some details of a case which cannot admit of this explanation. An intemperate man was attacked with symptoms of suppurative nephritis, of which he died; the nature of the disease was detected, at the very commencement, by a microscopical examination of the urine, which revealed moulds from the tubes of the kidney, entangling pus corpuscles, and these latter free on the field. Numerous small points of suppuration were scattered through the kidneys, and the left contained two large recent abscesses.

We now come to consider the commoner forms of exudation into the tubes. Dr. Gairdner premises a useful observation on this part of his subject:

" The process of secretion in the kidney being, in fact, a normal process of exudation from the blood-vessels into the tubes, and one which, from its extreme complexity, is liable to very frequent derangement, it is not surprising that, of all the lesions of the

kidney, the presence of foreign matters in the tubes should be the most frequent. The greater part of such exudations, however, are either soluble in the urine, or readily carried away by it, and only come under the notice of the pathological inquirer in connexion with the alterations in that fluid. Of this kind are the albumen in Bright's disease, and the sugar in diabetes, besides a number of soluble substances which, although connected with morbid processes in the kidney or elsewhere, find a ready exit from the system, and do not remain to block up the tissue of the organ."—p. 11.

When, however, the secreting cells of the kidney receive substances which do not remain in solution, obstruction of the tubes takes place; the anatomical structure of the organ obviously increasing this tendency. The consistence, colour, volume, and weight of the kidney vary with the character and amount of exudation. Thus, the saline exudation just described generally renders the kidney soft, œdematous, and easily torn. When the exudation approaches nearly in colour to the kidney itself, we have great difficulty in distinguishing its presence, the organ presenting a uniform paleness, without any further apparent change.

The two great forms of exudation into the tubes of the kidney are the oleo-albuminous and the exudation of their own epithelium, combined with other inflammatory products. We shall take up the latter first. On this part of kidney pathology Dr. Gairdner is not full, and therefore not explicit. His views must be gathered from parts of his essay further advanced than that section upon which we are particularly engaged, especially part iii., on "Lesions of the Tubes and Epithelium." It is exactly upon this point that we have the fullest observations from Mr. Simon and Dr. Johnson, to whose admirable papers in vol. xxx. of the Transactions of the Medico-Chirurgical Society we very gladly refer our readers. We believe the following is a tolerable *resumé* of the facts given by these observers:

As glands secrete natural, so do they eliminate morbid, products. The mere *action* is the same in both cases; but in the performance of this latter duty these organs, owing to complexity of structure, and the narrowness of their canals, are very liable to embarrassment from changes in the physical qualities of their own secretion. It is needless to say, that the kidneys, while more often called upon than any other organs in the animal economy to execute these tasks, possess the greatest anatomical hinderances to their performance,—hence their frequent disease, disorganization, ruin. The poison, the *materies morbi*, may vary almost infinitely; but the effect, as far as the

kidney is concerned, is the same. As scarlatina presents such
a poison, the elimination of which appears peculiarly to de-
volve upon the kidney, we are not surprised that " desquama-
tive nephritis" is a very frequent concomitant or result of that
disease. But we must introduce our readers formally to this
new medical nomenclature. The name was *first* applied by
Dr. Johnson to acute inflammation of the kidney. He has
introduced it for the purpose of characterizing the chief phe-
nomenon of the disease,—namely, desquamation of the epithe-
lium lining the tubes. This does not look very philosophical
on *principle :* but when we assure our readers that this great
phrase only indicates what takes place equally in the bronchia
and in the kidney tubes, they will perhaps concur with us
that Dr. Johnson may as well have described a *new* affection
of the urethra or air-cells, under the term of " *exudative inflam-
mation.*"

Mr. Simon and this author ring varied changes on sup-
posed acute, sub-acute, and chronic inflammation of the kid-
ney ; but as the lesions and symptoms do not essentially differ
in these varieties, we shall not trouble our readers with their
unprofitable discussion. Mr. Simon informs us that inflam-
mation of the kidney depends on some humoral derangement
of the entire system, and commences as functional excite-
ment manifested in an act of over-secretion.

" The morbid material which thus stimulates the kidney in its
struggle for elimination, will sometimes consist of products of faulty
digestion, the lithates or the oxalates; sometimes of matters cast
upon the kidney in consequence of suppressed function in other or-
gans,—the skin or the liver; sometimes will be the mysterious fer-
ment of a fever poison,—typhus or scarlatina. In these several cases,
whatever variety may exist in the detail of their causation, the es-
sential symptoms during life, and the essential anatomical changes,
are strictly identical in kind, they vary only in degree. The *ma-
teries morbi* seeks to effect its discharge by means of an increased
activity in the secreting functions of the kidney; it stimulates it;
and the result of the stimulation is, not so much an increase of the
watery secretion, as it is an augmented cell growth in the tubules
of the gland. This acceleration of function is incompatible with
maturity of the secreted products; the epithelial cells undergo va-
rious arrests of development, and become more or less palpably im-
bued with evidences of inflammation."—p. 144.

Fortunately, we have as satisfactory a mode of arriving at a
knowledge of the existence of this lesion as we have of diseases
of the chest by the stethoscope,—we mean, by the examination
of the urine. In it we shall find albumen, epithelium cells in

all stages of disorganization, blood corpuscles, and fibrinous casts of the tubules enclosing all those forms, and probably oxalic acid or lithic acid crystals, and *rarely* pus corpuscles. The whole range of medicine does not contain more satisfactory diagnostic marks of diseased action than do these appearances in the urine afford of the particular lesion in question. The cells of epithelium may be quite healthy, or they may vary almost infinitely, presenting, according to Mr. Simon, "a variety of indefinite shapes, constituting a series of connecting forms between the pus globule and the healthy gland cell." The fibrinous casts are very characteristic products of the morbid condition of the tubes. These are exceedingly delicate, transparent, and colourless cylinders, containing frequently in their mass some of the cell-forms just mentioned, with blood corpuscles. We have also seen lately these masses having oil globules attached to their surface. The case is doubtless one of those described by Dr. Johnson as " a combination of fatty degeneration, with desquamative nephrites," an idea supported by the history,—that of a drunkard,—taken in connexion with present symptoms, pain in the back, intense anasarca, strongly albuminous urine, containing debris of epithelium, and those peculiar fibrinous masses, all coming on within a few days after marked exposure(*a*). When we observe that these appearances in the urine often exist before the most delicate tests of albumen reveal its presence, and so warn us of the coming evil, and that they are still to be seen in that excretion after albumen has ceased to be secreted, in those periods of quiescence so likely to give a false security to both practitioner and patient, and thus keep us on the alert lest disorganization should creep on while we are in ignorance,—we need no longer insist that a microscopical scrutiny of the urine is as necessary to the full enlightenment of the physician, as a stethoscopic examination is already and by every one allowed to be in the diseases of the respiratory and circulatory organs. In both cases the mere symptoms are equally liable to deceive the most able, the most experienced.

We have already hinted that this desquamative nephritis is constitutional in its origin; that this action, so disorganizing in its results, is itself but an increased activity dependent on some more general condition. Dr. Johnson has stated his opinion to be that the predisposing cause of the disease is the pre-

(*a*) It is impossible to over-estimate the advantages derived from an accurate examination of the urine in this case. It was the most clearly marked case of idiopathic nephritis in the adult we have ever seen ; and the remedies such a diagnosis would suggest were attended with great success.

sence in the system of abnormal and irritating products, the results of mal-assimilation; and it is in the process of their excretion that the kidney suffers. It is highly probable that his opinion is correct, that mere exposure to wet and cold would never produce that form of disease under consideration, if the person so exposed had been previously healthy and well nourished. It is the *quality* of the blood sent to the kidney, and not the *quantity* of this material, which produces the disease. This is an important observation with reference to the general pathology of the affection, but we must not forget that the kidney is itself the seat of a morbid process, which, unless timely checked, will end inevitably in utter ruin of the organ.

The morbid anatomy of desquamative nephritis still requires to be worked out by careful observers. We cannot be said to know much of a state which has been made the subject of such very contradictory descriptions. As far as the naked eye is concerned, we may state that, in the *first stage*, the organ retains pretty nearly its normal dimensions, and that its vascularity is increased. In the more advanced stage it becomes firm, contracted, and granular, while its vascularity is *undoubtedly* diminished. In reference to this latter stage Dr. Gairdner observes, that while those changes are proceeding, the capillary vessels, which have ceased to be subservient to secretion, are usually obliterated. In consequence of the double obliteration of vessels and tubes, there is a considerable degree of atrophy in the diseased parts; and as the atrophy takes place, at first, chiefly in the cortical substance, great irregularities of the surface generally supervene. Thence arises the appearance, so well described and figured by Dr. Bright (plate iii. fig. 2), in which, from the atrophy of the cortical substance, the bases of the pyramids " are drawn towards the surface of the kidney." —p. 46. The atrophied portions of the kidney are usually exsanguine, hard, and tough. Dr. Gairdner does not appear to agree with Dr. Johnson, that a kidney in this condition ever exhibits the appearance of the granulations of Bright, which, it must be remembered, are owing to exudation *within the tubes*. According to the former observer, these granulations exist only when oleo-albuminous exudation supervenes on desquamation, or *vice versâ;* and that the atrophy proceeding around the diseased tubes gives rise to the irregularities and extremely tuberculated surface of the latter stages of Bright's kidney. We are disposed to agree with Dr. Johnson that the inflamed kidney does become granular; that the tubes and the vessels around them become atrophied, indeed almost annihilated, is unquestionable, and all the result of excessive epi-

thelium-exudation *within the tubes.* We have only to consider the existence of these conditions confined to certain portions of the kidney, and we have all that is necessary to form a granulated surface; but these granulations would not be the " granulations of Bright," according to the definition that they result *always* from exudation within the tubes, for it is obvious that in desquamative nephritis the granulations will be produced by the prominence of the healthy portions of the organ rendered salient on the surface by the atrophy of the diseased tubes(*a*).

The microscopic analysis of nephritis is much more satisfactory. In the first, or acute stage, its main characteristic is the engorgement of the tubules with an " uneliminable excess of crude and vitiated secretion." As well as with epithelium very slightly altered from its normal character, we observe the tubes to be filled with blood, amorphous matter, and possibly lithic acid, or oxalate of lime crystals. We repeat, the characteristic of this condition is an excessive development, but slightly altered, of the epithelium which lines the urinary tubules, by the accumulation of which these latter are rendered opaque. These appearances are confined to the cortical portion of the organ. The pyramids, it is stated, sometimes contain an increased number of cells, owing, probably, to their lodgment in the passage from the convoluted to the straight tubes. We are told by Dr. Johnson that, in the majority of cases,

" Under judicious treatment, the noxious matters are effectually eliminated; the vascular congestion and the desquamation of the urinary tubules simultaneously diminish; the cells which were thrown into the tubes are gradually washed out, and the kidney is completely restored to its original healthy condition"(*b*).

But this happy result does not always occur. The diseased process continues and the tubes become more and more plugged with epithelium; but it is obvious that there is a limit to this process. Though some of the cells may escape with the urine, what remain become so closely packed that their further formation is impossible; and, consequently, the processes of cell-development and secretion within tubes so plugged are arrested. Like all other abnormal exudations, the cells undergo, in course of time, disintegration. The disintegrated cells, attached to fibrinous moulds of the tubules, *results of the same process*, are washed out by the current of liquid flowing through the

(*a*) There appears good reason to think that the highest amount of granulation arises from the combined conditions mentioned by Dr. Gairdner, though Dr. Johnson is at issue with him on this point.
(*b*) Med. Chir. Trans., vol. xxx. p. 170.

conduits, and thus become objects of microscopic research in the urine. Dr. Johnson has made the important observation, that when, the tube becoming filled with its accumulated contents, the processes of cell-development and of secretion have once been arrested, it never recovers its lining of normal epithelial cells. We are now arriving at the advanced stages of this affection, when we see the basement membrane entirely denuded of epithelium, or containing a few granular particles of the old decayed epithelium, or, rarely, seen to be lined by "small, delicate, transparent cells." Upon this condition of the tubes supervene their gradual wasting, and a generally diminished supply of blood. We are not surprised that these conditions are revealed to the naked eye by the firmness, contraction, and granulation of the organ. However different the opinions of the various authors we are reviewing, as to the condition of the Malpighian bodies in *other* morbid states, in the particular one under consideration it is universally allowed that they also partake of the wasting occurring in the other portions of the kidney. The atrophied portions exhibit an abundance of fibrous tissue, which is but little more than the atrophied and altered remains of the basement membrane of the tubes, "whose cavities are obliterated, and thus what were tubes assume the appearance of transparent ribands, dotted here and there with small oval nuclei, which, when seen at the edges, appear to be enclosed between the layers of membrane"(a). With the obliteration of the tubes, obliteration of the capillaries, rendered of course unnecessary by the cessation of the secretion they were destined to supply, proceeds *pari passu.* But the tubes sometimes undergo a very different change. Deprived of their epithelium, they yet appear to have the power of secreting water; and, according to Drs. Johnson and Gairdner, they by their dilatation constitute the *cysts* so frequently seen in the kidneys. The former observer bases his opinion that these cysts are only dilated tubes whose lower end has been in some manner *closed*, on the following grounds:—that the tubes are often seen much dilated and thickened; that as the inner surface of the tubes has the appearance of being endowed with the power of secreting water, so the cysts usually contain a simple serous fluid ; that as an accumulation of oil occasionally occurs in the tubes, so the cysts are in some instances filled with the same material; that there is no reason to suppose that these cysts have any other origin. Dr. Gairdner, too, believes, from the

(a) Dr. Gairdner's Essay, p. 44. Dr. Gairdner has confounded Mr. Simon's opinions, as to the fibrous tissue of the kidney in chronic nephritis, with those of Dr. Johnson, who really agrees with himself.

occasional appearances of alternate distension and constriction
presented by the tubes, that cysts may be formed by the occlu-
sion and isolation of portions of tubes; though he admits he has
not been able to obtain demonstrative evidence on this point.
Mr. Simon gives a totally different opinion concerning the
nature of these bodies, and has devoted a very considerable
portion of his paper to the discussion of their origin.   He be-
lieves that they are the result of the gland-germs effused from
the obstructed tubes by the rupture of the " limitary mem-
brane;" that they are essentially of a *reparative nature*,—" the
last phenomena of the original disease, and the first of the at-
tempted compensation."   He states they are liable to arise
equally in the *fatty* as in the inflamed kidney; and that they
have a *function* to perform, being

"Organized for secretion into their own cavities, so as at least to with-
draw from the blood, if they cannot eliminate from the body, the
material which fills them."—p. 153.

It strikes us that their *function*, as laid down by Mr. Simon,
even supposing both kidneys to have " completely undergone a
vesicular transformation," can be of very small importance in
the animal economy. We are told, too, that it is the withdrawal
of these cysts which causes the contraction of the organ, and that
in the uncontracted specimen a false appearance of size is main-
tained by the presence of the adventitious cyst growth, which
forms a " succulent surplus" over and above the real kidney
structure. All the cysts found in the kidney, from the size of the
normal gland cells to that of a walnut, have, according to Mr.
Simon, the same origin. Dr. Johnson so utterly discredits these
opinions of his fellow-worker as to hint the probability of his
having mistaken the normal disposition of the tubuli for a cys-
tic structure; while Dr. Gairdner doubts if the tubes in diseased
kidneys ever suffer rupture from over-distension ; and is quite
satisfied that the vesicles sometimes seen in the kidney are ex-
ceptional productions, and not invariably connected with the
progress of desquamative degeneration, for proof of which he
has referred to his own observations in four cases.   It cannot
be denied that we may search kidneys in every stage of des-
quamative disease without finding these bodies, while it is quite
well known that cysts constantly occur in kidneys possessing
no other abnormal appearance. We think it very probable that
the origin of these bodies is by no means the same in all cases.
While in the main we agree with Dr. Johnson's views on cyst-
formation in the kidney, we are not so certain as that gentleman
appears to be, that the Malpighian bodies have no connexion

with those structures.   Dr. Gairdner has recorded one instance
in which the Malpighian capsules were occupied by distinct
cysts, and we see Dr. Lever has recently exhibited a monstrous
fœtus at one of the medical Societies of London, where the
Malpighian bodies had undergone a cystic transformation.
This very interesting subject requires further observations be-
fore satisfactory conclusions can be arrived at.

We have now to make some brief observations concerning
oleo-albuminous exudation into the secreting cells of the kidney.
This subject has derived great illustration from the labours of
Dr. Johnson, who has employed the term *fatty exudation* in a very
restricted sense, meaning by it the exudation of fatty molecules
and granules into the secreting cells of the tubules, and as having
no connexion with the process of inflammation.   We have pre-
ferred the term proposed by Dr. Gairdner, as indicating the *nature*
of the deposit, and its frequent connexion with the true products
of inflammation.   On the question, whether fat in the kid-
ney be always the result of a totally different condition from
inflammation, as assumed by Dr. Johnson, we most fully agree
with Dr. Gairdner, that the terms "inflammatory" and "non-
inflammatory" are more applicable to the modes of invasion of
disease of the kidney, than to differences in their pathological
anatomy, and that *none* of the lesions of that organ can be
correctly considered as having an exclusive connexion with
any specific pathological cause.   We would particularly re-
commend the section of Dr. Gairdner's essay on "oleo-albu-
minous exudation from the blood-plasma" to the careful perusal
of our readers.   The association of fat with non-inflammatory
conditions of the system is almost universal in this country.
It would be hard to conceive a greater pathological mistake,
or one whose tendency is more injurious to practice.   Fatty
kidney, heart, liver, steatoma of the arteries, are all put in the
same category, the general expression of which may be said to
be *struma*, the general treatment *tonic*.   But it is quite certain
that all inflammatory products are more or less fatty; that, for
instance, the granules of the exudation-corpuscle of pneumonia
are almost entirely composed of *fat*.   We are informed, indeed,
by Dr. Gairdner (who quotes the researches of Guillot), "that
in some of the forms of so-called pneumonia, the quantity
and size of the fat globules and granules are such as to consti-
tute a true fatty degeneration of the lung, in the same sense in
which the term has hitherto been more familiarly applied to the
corresponding lesions of the liver and kidney."—p. 20.   We
make, therefore, *in limine*, this objection to Dr. Johnson's
paper, that, though in it the morbid anatomy of fatty kidney is

accurately and beautifully described, it contains the weighty error of associating this condition with an exclusive pathological cause, always different from, nay, *antagonistic to* inflammation. This, if an error, is of course a *practical* one, and one of obvious interest in the question of treatment; yet in controverting the doctrines of Dr. Johnson on this point, we desire to be understood not to disbelieve that fatty deposits in the secreting cells of the kidney are often the product of general states of the system, to which the term inflammation can by no means be applied. No one can doubt that the fatty liver and kidney of phthisis do not owe their fatty degeneration to inflammation of those organs. Similarly, we believe, Dr. Johnson has not erred in ascribing the particular appearances in the kidney, which form the subject of his first paper, to general constitutional conditions *in a great number of cases.* Our objection is only to the *exclusiveness* of his doctrine. Of course Dr. Johnson asserts that congestion is never an antecedent to the fatty degeneration, an opinion which is contradicted by all other observers, including Dr. Gairdner. But as we have already touched upon this subject, we shall only state here that he explains the undeniable presence of congestion in these cases, by assuming it to result from pressure on the portal plexus, reacting upon the Malpighian bodies. *Active congestion* he ascribes to the increased action of one part of the kidney, owing to the other portions of the organ being put *hors de combat* from morbid deposit.

Dr. Johnson has made the important remark, that fatty degeneration of the kidney is very frequently attended with the same conditions in the liver, valves of the heart, and the arteries. In twenty-two cases of Bright's disease, there was in seventeen marked fatty degeneration of the liver; in four out of the remaining five there was a decided increase of fat in the hepatic cells(*a*). Dr. Johnson has also given fresh proof of its frequent association with tubercular disease of the lung. In forty-nine cases, this latter disease existed in fourteen. From these and other circumstances, Dr. Johnson appears fully entitled to draw the inference, that the source of the disease must be looked for in the processes of digestion and assimilation. The processes of primary or secondary assimilation, or both,

(*a*) The existence of fat in the hepatic cells is well known to be the natural condition of these cells. Dr. Johnson considers some of the cells of the kidney to contain a small amount of fatty granules as a normal constituent, an opinion with which Dr. Gairdner does not agree. We believe the former observer to be right. If a small amount of fat be not natural to the kidney, we have yet to see one in a healthy condition.

fail in regard to this fatty matter, which, not undergoing the changes requisite for its ready elimination from the system, is thrown into the circulation. An effort is made to carry it off by the liver and kidneys, whose secreting cells, unable to excrete it with sufficient freedom, thus become charged with the morbid material. The naturally small amount of oil in the urine, not suffering any notable increase in Bright's disease, this effort of the kidney-cells must, in great measure, be considered as unsuccessful. Hence the obstruction in the tubes of the organ, and a serious interference with its functions. All this Dr. Johnson describes well, as the product of an attempt on the part of the kidney to eliminate a mal-assimilated element. But does not this bring the true " morbus Brightii" of our author into the same category with " desquamative nephritis"? In both, the kidney is not primarily at fault. In eliminating the *materies morbi*, in both cases, let it be remembered, a *general condition*, the organ suffers. True in the one case the " materies morbi" is itself part and parcel of the disease, and itself obstructs the secreting structure in the process of elimination, while in the other it obstructs only by inducing a vast increase in the number of epithelial cells. True the one is the result of conditions, for the most part permanent and incurable; the other of states, temporary, and to a great degree under our control. But the analogy in the ultimate principles on which these affections rest is striking and important. The compound granular corpuscles, so generally attendant on the inflammatory process, are present in the latter of these conditions, and almost insensibly shade off into the large fat-globules of the former state. May not also, as Dr. Gairdner has suggested, this so-called fatty degeneration, considered so exclusively *chronic*, be in reality but the advanced stage of processes more or less acute, which have not been fatal in the first instance? And we are told by Gairdner that *desquamation* is more often associated with the oleo-albuminous than with any other state.

Dr. Johnson believes the cardiac disease, so often associated with Bright's kidney, to be the result of a common condition of the blood in the majority of cases; at the same time giving his assent to the common doctrine, that the cardiac disease originates in some cases in the " morbid and irritating condition of the blood, consequent on the impaired function of the kidney."

In Bright's disease the urine occasionally contains a great increase of fat; but this is not a very common occurrence. The fibrinous casts we have already mentioned, as occurring in des-

quamative nephritis, are also observed in the fatty degeneration ; but they are rendered characteristic of this affection by entangling oil globules and cells containing variable quantities of fat ; epithelial cells, however, are frequently seen in the urine when the fibrinous casts are absent, and form the most important diagnostic mark of the special renal lesion.   In some experiments made by Mr. Simon upon cats which had been confined in a cellar, a considerable quantity of free oil globules, as well as epithelial cells enclosing various quantities of oil, were found in the urine previously to the appearance of *albumen* in that excretion. As the fat in the urine diminished, it became turbid, from coagulated albumen, on the application of heat and nitric acid. The kidneys were found in an advanced stage of Bright's disease. These observations clearly prove the great usefulness of a microscopic investigation, as well as a chemical one, when there is any doubt as to the true nature of the case.

The characters of the fatty degeneration, when slight in amount, are by no means very obvious to the naked eye. Nothing is more common than to mistake a fatty kidney for some other state, and *vice versâ*, of which Dr. Gairdner has given some proofs. But, as the accumulation increases, the kidney becomes granulated and mottled on the surface ; and, indeed, there is generally slight mottling of the whole cortical substance :

" The smooth, mottled kidneys are such as have the greater number of the tubes in the cortical portion almost uniformly gorged ; the gland is often much increased in size by the great amount of fat in the tubes ; the vessels are much compressed ; and the surface of the kidney sometimes presents an almost uniform yellowish white colour, with here and there a few vessels which have escaped obliteration. These are generally cases which have run a comparatively rapid course. The secreting function of the kidney has become greatly impaired, and death has been the consequence. The kidney which has arrived at this degree of fatty engorgement probably never becomes atrophied"(*a*).

In general terms, it may be stated that kidneys suffering under a great amount of fatty exudation, are somewhat larger than natural (though, according to Dr. Inman's observations, their *specific gravity* is diminished) ; their consistence lessened ; their colour of a pale, and almost uniform yellow, both on the surface and throughout the whole cortical substance, which intrudes very much upon the pyramids ; and they are, for the most part, smooth, or with a slight tendency to

(*a*) Med. Chir. Trans. vol. xxix. p. 9.

granulation. When the accumulation of fat takes place less rapidly and uniformly, some of the tubes becoming gorged with fat form prominent granulations; and these by compression of surrounding parts (and so producing their atrophy) become salient on the surface, forming the well-known " granulations of Bright." But it is probable, as we have already observed, that Dr. Gairdner is correct in ascribing great contraction and irregularity of the organ to *exudation* and *desquamation* combined.

On examining a section of the cortical portion with a power of 100 diameters, sets of convoluted tubes are seen crowded with their fatty contents. On examining it with a power of 350 or 400 diameters, the fatty material is seen to be contained within the *epithelial cells.* The recognition and distinct statement of this fact by Dr. Johnson has probably enlightened us more on the true pathology of the kidney than any other that can be named. It almost never happens that the whole of the tubes and cells are equally the seats of fatty deposit. The presence of oil globules in a free state is accounted for by Dr. Johnson, by the *rupture* of the cells in which they were contained. Dr. Gairdner believes that they are sometimes seen interspersed among the nuclei and cells as their original condition. This latter author observes that "fatty deposits may exist in the cells of the kidney in large or small granules. It sometimes takes the form of a nearly molecular deposit; in this case it forms a mere shading, obscuring the nucleus, and rendering the cell more or less opaque. At other times cells may be seen in different states of fulness, their contents being granules of nearly equal size, and not larger than from $\frac{1}{500}$ to $\frac{1}{300}$ of a millimetre. This is the granular corpuscle or inflammation-globule of German writers. Again, the contained granules may be very unequal in size, the cell being irregularly distended or partially filled with granules and globules, from $\frac{1}{500}$ up to $\frac{1}{100}$ of a millimetre."

In the *treatment* of this affection Dr. Johnson insists with great propriety upon the importance of invigorating the general constitution by hygienic means, and by the administration of chalybeates We have given sufficient reasons for the application of local remedies also, at least in its early stages. Dr. Johnson, somewhat naively, considering the pathological theory he upholds,—observes that the kidneys will require some special treatment, with a view to relieve *congestion,* which necessarily interferes more or less with the function of the gland, if it do not increase the tendency to fatty accumulation. Local bleeding may sometimes be called for, and it is a measure often followed

by great relief, and a manifest improvement in the secreting power of the kidney.

Under the head of " Lesions, chiefly affecting the Vascular System," Dr. Gairdner has described, by the name of " waxy degeneration," a morbid condition of great interest. The ultimate elements of this affection are obliteration of the capillaries, and dilatation, with thickening of the tubes. He divides the disease *into two stages*. The first stage is attended with great irregularity of distribution of the superficial veins, hence the characteristic " marbled" appearance in it. On section, the cortical substance has considerable volume, and presents a smooth, glistening, almost semi-transparent appearance, which, according to him, cannot be better distinguished than by the term " waxy." It has a general pale, flesh tint, while the bases of the pyramids are indistinctly marked. The greater portion of the cortical substance is impervious to injection. In the second stage of the waxy kidney, the organ is perfectly pale throughout, with the exception of a very few stellated superficial veins. It is still heavy and voluminous, acquires additional firmness and elasticity, and has the general appearance of a true non-vascular texture. It is of a light fawn-colour, which extends to the pyramids, the bases of which become still more confused and intermingled with the cortical substance than in the marbled kidney. The capsule is more firmly adherent to the external surface than in health. Dr. Gairdner remarks that, from the pale and yellow appearance of the kidney in this stage, it is very apt to be mistaken for an extreme degree of the fatty degeneration, and alludes to the *lustrous character* of the cut surface as a valuable diagnostic between these two states. There is not unfrequently an entire absence of exudation in these cases. The capillary vessels surrounding the tubes are not visible, and in their place there is fibrous tissue, while the tubes undergo dilatation and thickening, and become twisted and varicose. Bright and Rayer have figured this condition, though unaware of its real nature, and have described it as connected with albuminous urine and dropsy, with which opinion Dr. Gairdner entirely concurs. From various considerations he considers *intense congestion* the starting point of this peculiar lesion.

We intended to present our readers with the general conclusions at which Dr. Gairdner has arrived concerning the pathology of the kidney, but the already formidable length of this article compels us to waive our intention. We cannot conclude without earnestly recommending his essay to all who really wish to know the minute pathology of the kidney.

Those who consult it will find the various lesions most accurately and copiously figured, and illustrated by excellent cases.

Clinical Lectures delivered in the Theatre of Mercer's Hospital during the Session of 1847–8.   By JAMES F. DUNCAN, M. D., &c., Assistant Physician to the Hospital.   Dublin, McGlashan. 1849. 8vo. pp. 122.

THE stimulus given to the acquirement of a practical knowledge of medicine, as obtained at the bed-side of the patient, by the labours, in the first instance, of Whitley Stokes and of Graves, seems to have produced most excellent results in the method of clinical instruction so generally followed at present, not only in the hospitals of our own city, but all over the British empire. The student is now taught to inquire and investigate for himself; his observations directed in the proper channel, his errors explained and corrected, he is no longer compelled to adopt, without due examination on his own part, the *dictum* of his teacher; nor allowed, as in former days, to grope along in darkness, acquiring a sort of empirical knowledge of his profession. This plan has its good effects, both on the teacher and the taught: the former is stimulated to a careful discharge of his duties; he shares in the emulation of his pupils for the attainment of a perfect knowledge of every case that may come under his care; and he is careful to keep himself acquainted with every new fact and every new discovery in medicine. Its effects on the latter are best exemplified by the recent valuable additions to pathology and therapeutics, so many of which are due to the junior members of the profession.

These considerations have been suggested to us by the perusal of Dr. Duncan's clinical lectures, which, though not remarkable for much originality of observation or new discovery, are characterized by judicious investigation and patient inquiry, and evince the author's acquaintance with the newest doctrines of pathology. Intended for students, to whom they " were originally delivered, *vivâ voce*, from rough notes prepared for the occasion, without having been written out in a form suitable for publication," the style of the lectures could not be expected to be as ornate as if they were carefully prepared for the press, yet it is smooth, very readable, and with but few redundancies.

The volume contains only ten lectures, which appear to have

been delivered simply as illustrative of cases under treatment in the hospital, and not with the view of describing any special class of diseases. In the first lecture the author describes shortly the various causes on which diarrhœa is supposed to depend, and, glancing at the treatment adapted for some of the forms, bears his testimony to the efficacy of strychnia(a) in those cases attended with absence or deficiency of bile in the evacuations, for which it was first recommended by Dr. Bardsley of Manchester. Dr. Duncan believes that the efficiency of this remedy depends on its action in promoting secretion: he does not, however, state in what doses he prescribed it, or with what other remedies he combined it.

The fourth lecture is devoted to the consideration of a case of inflammation of the membranes of the spinal marrow, occurring in a young girl aged 18, and which readily yielded to the ordinary antiphlogistic treatment,—general and local bleeding, calomel and James's Powder, and tartar emetic. The author takes the opportunity afforded to him by it, of giving a short account of the epidemic cerebro-spinal arachnitis, which was so well described in the second volume of our New Series by Dr. Mayne. He considers his case to bear remarkable *similarity* to the detail of symptoms given by that physician; but we must confess that we think Dr. Duncan would have rendered his observations more practically useful had he directed attention to the *dissimilarity* which the symptoms presented, as a means of diagnosis between the two affections. For example, the great collapse, the muscular rigidity, the tetanic expression of the countenance, the twitchings of the muscles, and, finally, the convulsions, all of which were absent in our author's case of spinal arachnitis; and, further, the .marked difference in their amenability to treatment. A singular typographical error occurs in this case: speaking of the specific gravity of the urine, it is stated that the *thermometer* showed it to be 1035.

The fifth lecture is taken up with an account of Bright's disease of the kidney, and a short but good *resumè* of Dr. Johnson's researches on its pathology. That these are not in every respect in accordance with the most modern investigations, our readers will learn from the lengthened notice of Dr. Gairdner's labours in the preceding review, which, however, were not pub-

(a) **Dr. Duncan spells this word strychnine; in doing so he follows a very common error of medical writers and prescribers. Alkaloids should be written with the termination** *a*, **as** *strychnia, quina, morphia, narcotina,* **&c.; vegetable acids with the termination** *ic*, **as** *tartaric, citric, meconic, tannic, gallic* **acids, &c.; and neutral vegetable principles with the termination** *in* **or** *ine*, **as** *salicine, cantharidine, piperin, picrotoxine,* **&c.**

lished when Dr. Duncan delivered this lecture, although his volume bears the date of the present year.

The greater number of the remaining lectures are devoted to the consideration of several cases—some of them rare examples—of diseases of the lungs and heart. In these the junior practitioner will find many useful hints on diagnosis, which prove that the author is a pains-taking physician, and a careful investigator into the varied phases of disease.

We have only one further remark to make before concluding, and that regards a habit which is much too general amongst medical writers, of contracting the words in their prescriptions to as few letters as possible, scarcely ever giving a termination. If our own language, with which it must be supposed the profession is more familiar, were to suffer the same mutilations, few amongst us could decipher an author's meaning; how much less, then, can such Latin be read or understood? Medical Latin is, in all conscience, barbarous and ridiculous enough without being rendered more absurd by such wholesale amputations as it is often compelled to undergo. We cite at random some of Dr. Duncan's directions in his prescriptions; but, in doing so, we beg that he will understand our observations do not by any means apply to him alone; he has only followed bad example. The following are given *verbatim:*

" Ft. pil. 3tiis horis sing. sum.——Infricet. ung. hydr.——Mist. Pector. c. soda.——Vini ʒiv.; beef tea; cont. cæt."

The Editor of this Journal has, we think, very properly refused the admission of long prescriptions into its pages; the substance of the prescription, or the dose of the chief ingredient, being merely given in every instance.

Reflections on Organization, or Suggestions for the Construction of an Organic Atomic Theory. By HENRY FREKE, M. B., M. R. I. A., &c. Dublin, McGlashan. 8vo. 1848. pp. 80.

WE believe, notwithstanding what some electricians say to the contrary, all matter to be essentially inert; we believe it to be incapable of originating, directing, or ending its own motions; and we think those physicians argue most logically who regard both motion and rest as the result of forces acting upon, always accompanying, but not the less abstractedly distinct from the substances upon which they operate. We are willing to admit that the forces capable of producing material motions can only manifest themselves when matter is congregated in masses.

Gravity, cohesion, repulsion, can only be called into opera-
tion between masses or particles of matter; and if a single
particle can be imagined existing alone in space, we do not
see how the forces we have enumerated could be at liberty
to act.   Under these circumstances, Dr. Freke, the author of
the work before us, considers that the forces alluded to would
be latent, and that the presence of other particles or masses,
calling these forces into exercise, entitles us to consider them
as reciprocals, or stimuli of those causes of motion.   It is ad-
mitted that, in a state of rest, the electrical forces with which
all material bodies are endowed remain in a condition of la-
tency; and it is as a consequence of molecular motion, whether
produced by friction, change of state, chemical action, or any
similar cause, that these forces are called into activity.   It is
known that the electrical forces, thus becoming manifested,
display distinct properties; and, if we understand Dr. Freke
aright, he regards the one as the reciprocal or stimulus to the
other. Perhaps, however,—for he is not very clear on this head,
—he may consider the molecular motion, which renders electri-
city manifest, its true reciprocal or stimulus. So far we find no
occasion to dispute Dr. Freke's postulates; but there is another
position which he assumes, which we cannot say that we dis-
agree with, for we are not sure that we understand it: it is to
the effect that, when the forces are aroused into activity by
matters reciprocal or stimulus, "they then radiate centrally,
giving manifestation to active results, and range the recipro-
cal or stimulus round the inanimate matter, in the form of an
envelope surrounding a nucleus." We have already confessed
that we do not clearly understand what is meant in this postu-
late.   A current of cool air, passing over the surface of a pool
of water, may cause the upper stratum to be converted into ice;
latent heat becomes sensible, and the current of cold air must
be considered as the reciprocal which called it into manifesta-
tion.   Does the cold air range itself round the ice as an enve-
lope surrounds its nucleus?

A piece of silk is rubbed to a glass rod, and the latter be-
comes electrified.   Surely the silk does not usually constitute
an envelope for the glass rod.   It may be, however, that we do
not comprehend Dr. Freke's meaning; and we shall, therefore,
proceed to develope in as few words as possible his applica-
tion of these principles to a theory of organization.

We cannot conceive life without motion, and inasmuch as
all motion is produced by the operation of force upon inert
matter, organization must be looked upon as the resultant of
certain forces.   Let us call the force by the operation of which

organized beings are produced, plastic force, vital force, organizing agency, &c., or any other name we will, the principal objects which we must maintain in view, forgetting a definite idea of its nature, are the particulars in which it differs from the other recognised forces, and the peculiarity of the motions which it produces in matter. Now, one of the most striking characteristics of this force, as displayed in the process of organization, is the occurrence of attraction between organic molecules of different kinds, and of repulsion between those which differ from each other. In these respects it differs from all other known forces; for although cohesion may unite particles of a similar nature, it will equally draw together those that are dissimilar; and affinity, as well as electricity, joins different kinds of matter, while they cause repulsion to occur between substances of a similar nature. But while the vital force, in its rule over nutrition, controls matter in the manner we have described, there are other phenomena which occur in organized beings, which are discrepant with these attributes. The organic molecules which are attracted like to like in the building up of the tissues, are themselves composed of elements very different in their several natures,—oxygen, hydrogen, nitrogen, carbon. The elements which enter into most organic molecules differ extremely from each other in their properties; and in attributing their formation to the action of the vital force, it has always been considered a difficulty how the same force can, in nutrition, produce attraction between *similar* compound molecules, and in the construction of those compound molecules cause *dissimilar* elements to unite. This Gordian knot Dr. Freke has cut with singular facility. According to him the organic molecules were ordained at the time of the creation, and they have since had nothing to do but unite with each other according as necessity required.

As for the rest, the path of explanation is easy. Organizing energy remains latent in these organic molecules, until called into activity by the presence of a reciprocal or stimulus, when it radiates centrifugally, and ranges the reciprocal round it as a cell of which the organic molecule constitutes the nucleus. But in becoming manifest the organizing energy diffuses itself, and the organic molecule, becoming deprived of it, falls under the influence of chemical forces, and thus, to use the expressive words of Dr. Freke, "death is essentially a part of life."

We regret that we cannot devote more space to this interesting work. In this age of paste and scissors book-making and compilation it is pleasant to meet with an author who has the originality to think, and the boldness to express his medi-

tations. We hope to meet with Dr. Freke again, when he shall have more completely investigated the mine which he has opened in the little volume before us.

Elements of Chemistry, Practical and Experimental, including the most recent Discoveries and Applications of the Science to Medicine and Pharmacy, to Agriculture, and to Manufactures. By Sir Robert Kane, M. D., M. R. I. A. With 236 Illustrations. Dublin, Hodges and Smith. Second Edition. 8vo. pp. 1072.

THE science of chemistry has made an extraordinarily rapid progress within the last few years ; the labourers in its fields have been numerous and skilful, and the stores of knowledge they have accumulated have been proportionately great and valuable. To its more recent cultivators the British islands have furnished a fair quota, not least distinguished amongst whom, for labour, research, and original discovery, stands the name of our own countryman, the second edition of whose work we are now about to notice. To him are due many of the industrial applications of the science, more especially as regards the improvement and advancement of agricultural industry. While, however, Sir Robert Kane has applied his talents to the prosecution of this, probably the most directly beneficial of the many branches of so generally useful a subject, he has not neglected to cultivate what may be termed its higher walks. The first edition of his Elements of Chemistry, which was noticed at length in the eighteenth, nineteenth, and twentieth volumes of our former series, is the strongest evidence of this, now further confirmed by the improvements and additions made in the second edition just published. A few of these we shall proceed to mention shortly.

With reference to a work, the character of which is so well established, it might be almost sufficient to state that every chapter and every section have undergone such alterations, and received such additions, as render the entire a complete exponent of the present state of chemical science ; but we cannot avoid pointing out some of the more important of these alterations and additions.

In the section on dynamical electricity the most recent improvements in the construction of constant batteries are noticed at length, especially those of Professor Callan and the gas battery recently invented by Mr. Groves. The exertions of the first-named natural philosopher, and his inventive skill, are testified by

his battery of 800 four-inch square plates, constructed on his own principle for the College of Maynooth, and which is described by our author as producing the most brilliant results, and being, probably, the most powerful galvanic apparatus now existing.

In the fifth chapter, that on chemical nomenclature, we are presented with a startling proof of the discoveries made by chemists during the last eight years. When the first edition was published in 1841, but fifty-five elementary substances, it was stated, were at that time known; but in this edition it is mentioned that "there are at present known sixty-two substances which the chemist has not been as yet able to separate into other elements."

The important subject of *thermo-chemistry* is most carefully considered in the seventh chapter; the determination of the quantity of heat produced during the combustion of a given quantity of combustible substance—an economical question of such vast importance in the arts—is elucidated by a valuable commentary on the recent researches of Grassi, Faber, Silberman, and Andrews. The investigations of the three latter chemists are especially noticed as negativing Welther's rule, that in all cases of combustion the quantity of heat evolved is proportional to the quantity of oxygen which enters into combination:

"Those chemists having determined the heat evolved by the combustion of a great variety of ethers and carbo-hydrogens, found by their results, that, on subtracting the oxygen, together with the hydrogen necessary to convert it into water, the remaining elements do not develope as much heat as they should in a free state. They also examined sulphur in its different forms, and found that it evolved 23 units of heat. In its combination of sulphuret of carbon, which yields 34 units, the elements, if free, would have given $31\frac{1}{2}$, that is, when combined they yield $2\frac{1}{3}$ more than when free."—p. 245.

Sir Robert Kane is inclined to coincide with Professor Andrews, of Belfast, in the results obtained in the experiments of that chemist, by which it was proved that the quantity of heat evolved by the union of acids and bases is determined by the nature of the base, and not at all by the nature of the acid,— a result directly contradictory to the views of Hess; and adds, that it is to the Belfast chemist " we are indebted for the philosophical announcement of the numerical laws of thermo-chemical action."

The additions to the sections on the atomic constitution of matter, and the isomorphism of bodies, are valuable and important. The opinions advanced by Kopp and Schrœder in Germany, and by Playfair and Joule in England, are carefully described; and as Sir Robert Kane does not consider that the

results detailed by these investigators have been very satisfactory as an addition to our knowledge, he proceeds to point out and correct the " inconsequences" into which they have fallen. Our author's views on this department of chemical philosophy are described in his usual lucid style ; and although we are most anxious to make our readers acquainted with them, we fear that they might suffer by any attempt at abridgment on *our* part, and therefore prefer to recommend their perusal in his own words. In the first edition the circumstances of isomorphous replacement were reduced to six simple propositions. To these a seventh is now added, namely :

" We cannot admit that isomorphism results from equality of the atomic volumes of bodies, as we have found that, although many isomorphous bodies have the atomic volumes the same, many others have quite different atomic volumes, and bodies have the same atomic volumes which are not at all isomorphous."—p. 314.

That portion of the volume devoted to *organic chemistry* has been most carefully revised, and by the simplicity of the arrangement adopted, and the clearness of the details, stripped of much of its difficulty. The most recent improvements in the methods proposed for organic analysis are given at length, and the process of Will and Varrentrapp for determining the quantity of nitrogen is described and most deservedly noticed in terms of high commendation for its simplicity and rapidity in execution. The improved method of alcalimetry proposed by Will and Fresenius is also described in full, and its application to *acidimetry* pointed out. The nature of the organic bases, as determined by the artificial production of organic alkalies, and the constitution of the organic alkaloids, are investigated with much care ; and a concise but clear account of the theoretical views now generally adopted, and which are founded on those advocated by Fresenius, is given.

The views as to their constitution, when based on Woehler's hypothesis, are thus clearly and concisely described :

" The idea of Woehler that narcotine consists of opianic acid united to the true alkaloid, and that it is analogous in constitution to opiammon, presents to us another view of the constitution of organic alkalies, and one recently supported by additional results. Thus Rochleder and Redtenbacher have announced that piperine consists of aniline, with two equivalents of an azotized acid, and they have produced it artificially from aniline. Also that narcogenine consists of the opianic acid, with two equivalents of the same base that exists in narcotine. This form of saline or binary constitution may exist very extensively in those bodies, and it is to be hoped that the researches now being undertaken in this highly important field will soon enable us to reduce the natural alkaloids

to the same principles of classification as I have shown to regulate the alkalies of artificial origin."

" In concluding this subject," writes Sir Robert Kane, " it is important to record, that for the researches on aniline, which were the basis of all subsequent exact inquiry on this branch, science is principally indebted to Professor Hoffman, with whom was associated, in many of his investigations, Dr. Muspratt, of Liverpool."— p. 976.

The chapter on the chemical phenomena of vegetation contains a most valuable summary of the present state of chemical knowledge, as it bears on agriculture. In it, the mode of nutrition of plants is described in simple language, and the action of manures, and the effect of the rotation of crops, clearly explained.

We have now mentioned a few, and but a very few, of the improvements to be found in the second edition of Sir Robert Kane's Elements of Chemistry. Every page bears the stamp of careful revision; and we need scarcely remark, that no new fact or novel theory has escaped the notice of the author. The entire work, now perfect in every department, constitutes a volume equally useful, we might say necessary, to the student of medicine and the physician, to the simple husbandman and the skilled agriculturist, to the man of letters and the scientific philosopher. Indeed we know of no work on the subject to be compared to it, or which combines so happily compendiousness and completeness.

Before concluding we think it necessary to remark that, although the number of pages in the present are fewer than in the former edition, it contains a much greater amount of matter, which has been effected by enlarging the size of the printed page, and by the use of a new and more condensed, yet clear and easily-read type. The woodcuts are beautifully executed, and many new ones seem to have been added.

Medical Portrait Gallery. By T. M. STONE, Esq., Librarian to the Royal College of Surgeons, London.

IT is only when we have lost an esteemed preceptor or a valued friend that we regret the want of a portrait or some such *souvenir*. We suppose the hearts of Englishmen are as retentive of early recollections, and as susceptible of emotions of friendship, as our continental neighbours; and yet there is scarcely a single professor, or man of any eminence, either connected with the universities of Germany or in private life there, whose litho-

graph may not be obtained in the adjoining Stadt. With the portrait of each favourite teacher every student provides himself on his obtaining his degree, and preserves it as a memento of his days of *Burchenschaft*. We have ourselves, as far as in our power, endeavoured to remedy this defect, and presented our readers with several portraits of Irish medical worthies during the last three years.

These observations are drawn from us by the receipt of five lithographic prints, a portion of a series of medical portraits now being produced by Mr. Stone, to whose zeal and energy we, in common with the profession generally, are much indebted. Those already published are of Professors Todd and Fergusson,—both capital likenesses,—and also Drs. Budd and Forbes, and Mr. South, all men distinguished in their several walks in the profession. They are skilfully drawn, and very well printed on India paper. We wish the undertaking every success, and soon hope to see the same enterprising spirit displayed by some artist and publisher in our own country, who shall, in the words of Mr. Stone in his prospectus, " furnish the members of the profession with the best remembrances of those who have attained for themselves a reputation in its ranks."

First Steps to Zoology. By ROBERT PATTERSON, Author of " Zoology for Schools." In two Parts, with 244 Illustrations. London, Simms and M'Intire. 1849. pp. 252.

Two charming little volumes, conveying sound instruction, while merely appearing to amuse; written in an easy, familiar style; and most copiously illustrated with wood engravings. We have not met with any other work so applicable to its intention, and so admirably fulfilling the objects of its author,— that of imparting to juvenile readers the rudiments of animated nature. Parents, teachers, and the rising generation, owe Mr. Patterson much for his successful efforts to render the latter acquainted with the forms, habits, and organization of animals.

If we have a fault to find it is that a proportionate size has not been preserved by the artist who illustrated the work: for instance, the figure of the little Stickle-back, or Pinkeen, of our pools and streams, is as large as that of the Sturgeon; and the representation of the huge Tunny fish nearly three times as small as the accompanying woodcut of the Pilot fish ! These, for children, are objections. We have no other faults to find.

PART III.

REPORTS, RETROSPECTS, AND SCIENTIFIC INTELLIGENCE.

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RETROSPECT

OF THE PROGRESS OF GENERAL, PHYSIOLOGICAL, AND PATHOLO-
GICAL CHEMISTRY, FOR THE YEARS 1846 AND 1847.

By WILLIAM SULLIVAN, Esq.,

FIRST CHEMICAL ASSISTANT IN THE MUSEUM OF IRISH INDUSTRY, AND CHEMIST TO THE
ROYAL AGRICULTURAL SOCIETY OF IRELAND.

Owing to the limited space which must be assigned to a Report on Che-
mistry in this Journal, it would be impossible to notice even one-half
of the important memoirs which have appeared within the period
specified, and I have, therefore, confined myself principally to two
divisions of the subject,—physical and animal chemistry. My object
in so doing has been to direct attention, in the first place, to a branch
of chemistry which is very little studied except by pure chemists,
but which is yet the most important,—namely, the laws which affect
chemical combination ; and, in the second place, to turn, if possible,
the attention of young physicians to a new and rich field of inquiry
which can only be properly cultivated by their assistance. The Irish
school of medicine has earned a well-deserved fame for practical know-
ledge, the true basis on which success in practice must always de-
pend ; but as yet it has, with a few honourable exceptions, not done
much for purely *scientific* medicine. I have, therefore, collected toge-
ther a few samples of what the continental professional men are doing
in one department of this, in the hopes that it may induce some to
imitate them, and thus assist in maintaining the reputation which
their predecessors gained for the Irish school in other more practical,
though not more useful departments. I have strictly confined my-
self within the years 1846 and 1847, in order to be able in future to
continue in a systematic manner an annual report ; and as I shall have
henceforth to notice only the work of one year, I hope to be able to
do more justice to the subject(*a*).

(*a*) I am indebted for many of the papers contained in this Report to Can-
statt's *Jahresbericht der Gesammten Medicin*, one of the most able and complete

Atomic Volume, and Specific Gravity.—Playfair and Joule(a) state that the atomic volume of ice, 9.8, is a submultiple for a large class of salts; and that this number was itself made up of numbers due to the volumes of the constituents of which it was composed, $\frac{9.8}{8} = 1\cdot225$, which they consider as the primitive volume. In support of this view, they calculated the volumes of all the metals the specific gravity of which have been tolerably accurately determined, and found the result one-twentieth less than the theoretical expression. They ascribed this deviation to the force of cohesion in the metals; and in proof of this, they found the specific gravity in the state of fusion gave results in exact accordance with theory.

They examined the oxides and sulphurets, and found that they gave very exact results, the force of cohesion not being so powerful; but in those usually called the magnesian oxides, they found five and a-half unit volumes instead of five volumes. They therefore contended that the magnesian metals ought to have their equivalents doubled, and that their oxides instead of being

$$R_2O, \ RO, \ R_2O_3, \ RO_2$$

should be

$$RO, \ RO_2 \ RO_3. \ RO_4,$$
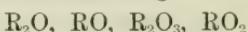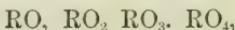
the oxygen increasing in arithmetic proportion. They also examined the volumes of dimorphous and polymorphous substances, and found that the differences of volume were either expressed by the unit volume $1\cdot225$, or by a multiple of it.

Influence of Salts or Acids on the Decomposition of Water by Metals.—Millon(b) has studied this subject very accurately, and ob-

works of the kind ever published. I have also used occasionally the Chemical Gazette, and I may take this opportunity of recommending this excellent little journal to all interested in chemistry. All the most important papers published are immediately noticed in it, and the abstracts of them which are given are most admirable. I may also mention, as connected with the progress of chemistry, the formation of the Cavendish Society, the objects of which are, the translation of recent works and papers of merit; the publication of valuable original works, which could not otherwise be printed, from the slender chance of their meeting with a remunerative sale ; and the occasional republication or translation of such ancient or earlier modern works as may be considered interesting or useful to the members of the Society. They have already published one volume of reports, among which is a paper of great interest to medical men, by Julius Vogel, on Endosmosis ; and an admirable one on Isomorphism, &c. The Society is at present engaged in the translation of Leopold Gmelin's great work, the *Handbuch der Chemie*, of which they intend to publish one volume this year. As the power of the Society to publish, and consequently the value received by the subscribers, entirely depends on the latter, I think I shall be doing a great service to chemistry in Ireland by recommending every one who has an interest in the advancement of the science to become members of it.

(a) Memoirs of the Chemical Society ; and Chem. Gaz., No. 82, p. 126.

(b) *Compt. rend* , July, 1845 ; *Annal. de Chem.* vol. ix. p. 221 ; and Chem. Gaz., No. 83, p. 132.

tained some very important results. He found, for instance, that the rapidity of decomposition was sometimes increased one-hundredfold, even by a minute quantity of certain salts. Thus pure zinc in dilute sulphuric acid is very little acted upon; but on adding a small quantity of certain salts the action is increased, and this increase differs for each salt. Thus if the action of pure dilute sulphuric acid is represented as 1, that of the bichloride of platinum will be 149; of arsenious acid, 123; of sulphate of copper, 45; and so on with other salts. A solution of oxalic acid has no action on zinc, even when heated, but with a few drops of chloride of platinum the whole is soon converted into oxalate. The action of a great many other acids is hastened in a similar matter.

This addition of a salt sometimes changes the result; nitric acid with four and a half equivalents of water, and diluted with two or three times its volume of water, poured on iron filings acts on the iron with evolution of nitrous acid fumes; but if only one drop of bichloride of platinum be added, hydrogen is evolved in place of nitrous acid, and protonitrate of iron with nitrate of ammonia is formed. Bismuth, silver, and mercury, do not decompose water under any circumstances. Copper, in contact with bichloride of platinum and dilute hydrochloric acid, heated, gives off hydrogen freely; but if nitric acid be employed, the same chloride will at once arrest the action. He obtained with other metals equally important results.

Influence of Light on Chemical Affinity.—Jules Bouis(*a*) found that if a boiling, saturated solution of cyanide of mercury be exposed to the action of chlorine gas in strong sunlight, it will be decomposed into chloride of mercury, hydrochloric acid, and sal ammoniac, which remains dissolved, and chloride of cyanogen, nitrogen, and carbonic acid, which are evolved.

Observations on the oxidizing Power of Oxygen when disengaged by means of Voltaic Electricity.—Kolbe(*b*) found that by submitting a concentrated solution of sesqui-chloro-carbo-hypo-sulphate of potash to the action of a voltaic battery it was decomposed into chlorine, carbonic acid, sulphuric acid, and perchlorate of potash, the formation of the latter being preceded by that of chloric acid. When chloride of potassium was substituted, chlorate and perchlorate of potash were also formed, even when sufficient sulphuric acid was added to combine with all the potash.

On the Decomposition of Water into its constituent Gases by Heat.— Grove(*c*) states that every process which combines gases will separate them. Thus he found that platinum wire heated almost to its fusing point decomposes water, giving off a current of mixed gases,

(*a*) *Annal. de Chim. et de Phys.*, vol. xx. p. 446.
(*b*) Chem. Gaz., No. 101, p. 27.
(*c*) Report of the Meeting of the Brit. Assoc. for 1846.

being exactly the reverse of what takes place when such a wire is introduced into a mixture of oxygen and hydrogen, water being in this case formed.

Amount of Ammonia in the Atmosphere.—Graeger(*a*) has found that 1·000000 part of air, the barometer being at 744·97^{mm}, and thermometer at 32° F., contains 0·6148 grms., or somewhat more than $\frac{3}{5000000}$ of carbonate of ammonia.

On the Presence of Hydrosulphuret of Ammonia in Hail.—Pelletier(*b*) found sulphuret of ammonium in the hail which fell at Douè-la-Fontaine on the 26th and 27th of January, 1846.

On the Existence of a new Oxacid of Nitrogen, the Pernitric.— Barreswil(*c*) is of opinion that the blue liquid which is obtained on condensing by cold a moist mixture of hyponitric acid and binoxide of nitrogen is neither nitrous acid nor a mixture of binoxide of nitrogen and hyponitric acid, but a definite compound, corresponding to permanganic and perchromic acid, and having the probable formula of NO_7. It has not, however, been as yet obtained in combination with bases.

On the Formation of Hypo-iodous Acid.—Kœne(*d*) has succeeded in obtaining hypo-iodous acids, but not in the same way as hypochlorous acid.

Pentathionic Acid, a new Acid of Sulphur.—Wackenroder(*e*) has obtained a new acid by passing sulphuretted hydrogen through aqueous sulphurous acid, which he calls pentathionic acid. Its formula is S_5O_5. It is not altered by sulphuretted hydrogen, even after being kept for several months. Dilute sulphuric or muriatic acid produces no turbidness, but the hydrate of sulphuric acid decomposes it completely, sulphur being deposited. Chloride of barium is not precipitated by it, but a white turbidness is immediately produced with a large excess of perchloride of mercury. Acetate of lead produces no precipitate ; but with a solution of the barytes salt yields a copious white deposit, which is soluble in excess of the precipitant.

On a new Series of Acids of Sulphur.—Plessy(*f*) has obtained a new series of acids by the action of sulphurous acid on the perchloride of sulphur in the presence of water. If the salt $S_5O_6BaO, 2HO$, which he had previously described, be dissolved in water, it parts with sulphur, and a new salt is obtained, having the formula S_5O_7BaO, HO. The salt $S_5O_6BaO, 2HO$ contains two acids, one of which, by parting with sulphur, yields the acid S_5O_7. This more sulphated acid has not, however, been isolated, but its formula may be assumed as S_6O_7.

(*a*) *Archiv. der Pharm.* vol. xliv. p. 35.
(*b*) *Compt. rend.*, March 2, 1846.
(*c*) *Comp. rend.*, Sept. 21, 1846.
(*d*) Poggendorff's *Annal.*, vol. lxvi. p. 302.
(*e*) *Archiv. der Pharm.*, vol. xlvii. p. 272.
(*f*) *Compt. rend.* Feb. 8, 1846.

On a new Acid of Sulphur.—Fordos and Gélis(*a*) have described an acid having the same composition as that of Wackenroder's, namely, S_5O_5, formed by the action of aqueous sulphurous acid on any of the chlorides of sulphur, but which they say cannot be compounded with chloride of sulphur, Wackenroder's acid, the barytic salt of which is soluble in alcohol and in ether, and cannot be precipitated from its aqueous solution by these agents, whereas this is exactly the method which they adopt to isolate their acid. This new acid is isomeric with hyposulphurous acid, S_2O_2, but they differ in all their characters. There is no such case of isomerism as this in mineral chemistry, we must look to organic chemistry for analogous cases; and this fact supports the opinion of Berzelius of the analogy between the composition of the recently discovered acids of sulphur and organic compounds.

Fordos and Gélis divide all the acids of sulphur into two classes: in the one the sulphur remains invariable, and the quantity of oxygen increases; in the other, the number of equivalents of oxygen being 5, it is the sulphur which varies as the numbers 2, 3, 4, and 5. The new acid is the last acid in the second class. They denominate the first the *sulphuric* series; it contains the acids formerly known; and the second the *thionic* series, which includes the four acids recently discovered. We have thus—

Dithionic, S_2O_5, hyposulphuric acid of Gay-Lussac and Welter.
Trithionic, S_3O_5, sulphyposulphuric acid of Langlois.
Tetrathionic, S_4O_5, bisulphated hyposulphuric acid, discovered by themselves in 1842.
Pentathionic, S_5O_5, the new acid.

It will be a very curious case of isomerism, indeed far more curious than any before noticed, if it shall be established that there are really two acids of sulphur, with the formula S_5O_5 as these experiments of Fordos and Gélis, and those of Wackenroder above mentioned, lead us to believe.

New Metals.—A number of new metals have been latterly discovered; among others, Dr. Claus discovered ruthenium in the residues of the platinum ores, that fruitful source of new metals. Herman discovered ilmenium in a new mineral called yttro-ilmenite; and Heinrich Rose has discovered two new metals called pelopium and niobium in the Bavarian tantalite.

On some double Salts of the Magnesian Group.—J. Isidore Pierre(*b*) has very carefully examined the salts of this group, including those of magnesia, copper, zinc, nickel, cobalt, manganese, and iron. Graham considers, with respect to the sulphates of these bases, that one of the equivalents of water cannot be eliminated except at a much higher temperature than is required for the others; that this equi-

(*a*) *Compt. rend.*, Nov. 1847; and Chem. Gaz. No. 124, p. 491.
(*b*) *Annal. de Chim. et de Phys.*, Feb. 1846; and Chem. Gazette, No. 82, p. 113.

valent may be replaced by an equivalent of a salt, so that the double salt formed contains one equivalent less of water than if each of the two simple sulphates had brought all its water into the molecule of the double salt resulting from their combination.

Pierre states that the results which he has obtained do not confirm those of Graham; he found that the sulphate of zinc, which contains 43·72 per cent., or seven equivalents of water, when exposed for a long time to a temperature of 230° F., and a current of dry air, lost 43·6 per cent., or the whole of its water; whilst Graham states that it requires a heat of 400° F. to expel the seventh equivalent.

The following are the general results at which he has arrived:

1. Sulphate of zinc, containing seven equivalents of water, retains the whole of it in the compound which it forms with the alkaline, or alkalino-earthy sulphates.

2. The sulphates of zinc and magnesia combine equivalent to equivalent, and the resulting compound contains a quantity of water equal to the sum of the quantities which both salts contained when separate, that is to say, fourteen equivalents, if the double salt crystallizes at common temperature.

3. The simple sulphates of zinc, copper, and nickel, yield all their water at a little above 212° in a long-continued current of air, instead of retaining one equivalent at 400° F., as stated by Graham.

4. The simple sulphates of zinc, magnesia, copper, and nickel, combine with other sulphates, or with each other, without elimination of the water.

Professor Graham has repeated his experiments, and still adheres to his original view of the constitution of the magnesian sulphates which these results of Pierre had impugned.

Researches on the Hydrates.—Fremy(a) has published some very interesting remarks on this subject, but which our space forbids us from noticing at the length which they deserve. Graham, in his investigations on phosphoric acid, has very clearly shown that there exists, in many cases, a certain relation between the capacity of saturation of an acid, and the quantity of water which this acid retains when it is hydrated. Fremy has also shown that the capacity of saturation of the tartaric and paratartaric acids decreases in proportion as they become dehydrated. But when acids become completely dehydrated, have they lost the property of combining with bases,—can they, in fact, be considered still as acids? This question, so important to chemical statics, Fremy first examines.

The property which acids possess of combining with bases in order to saturate them, and of displacing other acids from their saline combinations, according to the principles of Berthollet, must be considered as their essential character. Fremy, therefore, in order to determine the acidity of the anhydrous acids, caused them

(a) *Compt. rend.*, Dec. 21, 1846.

to act upon anhydrous bases, or upon salts containing acids of a less fixed nature. To this double test he submitted nearly all the anhydrous acids known,—as the carbonic, sulphurous, sulphuric, phosphoric, silicic, boracic, stannic, &c. These experiments prove that these acids may present all the characters of acids without the intervention of water, that is, that in the anhydrous state they are still true acids. Having established this point, Fremy wished next to ascertain whether all the acids were capable of forming anhydrous salts with bases, and whether there does not exist a certain number of salts in which water was an indispensable element.

It is generally admitted that the water of crystallization contained in the salt is outside of the saline molecule, and that consequently it only influences the physical properties of the salt. Recent experiments, however, prove that this is only partially true; Wurtz, for instance, has proved that the phosphites and hypophosphites contain a certain quantity of water, of which they cannot be deprived without complete decomposition. Chevreul has always arranged in different species the salts formed by the same acid and the same base, but which contain different proportions of water; and Regnault has long considered the water of crystallization as forming, with the anhydrous salts, groups which cannot be modified without at the same time producing a considerable change in the properties of the salts. These views are fully confirmed by the experiments of Fremy, who shows that there are several classes of salts, the molecules of which are truly ternary, and are always formed by the combination of an acid, a base, and water.

Fremy imagined that if the powerful acids, such as the sulphuric, nitric, &c., form with equally powerful bases salts which are almost constantly anhydrous, this would not be the case with those acids which possess but a weak affinity for bases. His attention was therefore directed to those hydrates of the metallic oxides which are soluble in alkalies, and which may be regarded as weak acids; and he found that these bodies have the property of entering into combination with bases only in the state of hydrates. Among the oxides which he examined were those of copper, tin, antimony, and chromium, which, according to his experiments, are represented by the formulæ:

$$CuO2, HO; SnO, HO; SbO_3, HO; Cr_2O_3, 10HO.$$
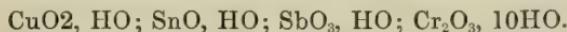
They dissolve in alkalies, and become insoluble on losing their water. Fremy convinced himself that the insolubility of these oxides in alkalies is really due to the elimination of a certain quantity of water, and not to those isomeric modifications which certain oxides experience when ignited.

The examination of the stannic and antimonic acids furnish him with striking examples of hydrates. He considers that these experiments establish a marked difference between the two stannic acids. Metastannic acid, he states, is capable of forming three hydrates with water. The neutral metastannates formed in the presence of a large excess of alkali, he represents by the general formula $Sn_5O_{10}, MO, 4HO,$

while he represents the stannates by the formula SnO_2, MO; the equivalent of metastannic acid being thus five times higher than that of stannic acid. He has, moreover, established the fact that the metastannates are always hydrated, that they are necessarily ternary, and are decomposed when deprived of their water. In this case the metastannic acid loses its acidity, while the stannates may be reduced, like most salts, to the anhydrous state without being decomposed. The fact that the same oxide is able, by combining with different proportions of water, to form two acids which are distinguished from one another by their properties, their equivalents, and their mode of combination with bases, is certainly very important, but it is by no means isolated.

The antimonates form a class of salts of great interest with reference to their water. Fremy found that each antimonate could combine with water in several proportions, and form ternary groups, a kind of double salts which cannot be compared to the ordinary hydrated salts, for each group possesses special chemical reactions which differ in proportion as the salt loses its water.

Conversion of Nitrates into Salts of Ammonia.—Kuhlmann(a) some years ago showed, in a beautiful series of experiments, that the formation of nitric acid in nitre heaps was preceded by the formation of ammonia. He also showed that the production of ammonia by the action of weak acid upon tin was not an isolated fact, but that it resulted from the action of this acid upon all the metals capable of decomposing water, and consequently the ordinary result of the contact of nascent hydrogen with nitric acid. Fordos and Gélis have confirmed all his results, and have added several other interesting facts, among others the decomposition of sulphurous acid by the action of nascent hydrogen.

Kuhlmann has since added some further experiments, in which he shows many interesting cases of the conversion of nitrates into ammoniacal salts. He found when some fragments of nitre are thrown into a mixture of zinc or iron and sulphuric acid, or, what is preferable, weak hydrochloric acid, the disengagement of hydrogen is stopped or retarded until the whole of the nitric acid of the nitrate is converted into ammonia. Nascent sulphuretted hydrogen occasions a similar conversion, at the same time depositing sulphur. When a nitrate, the metal of which is precipitated by zinc,—nitrate of copper for instance,—is placed in presence of a mixture of zinc and hydrochloric acid, for every equivalent of zinc dissolved there is one equivalent of copper precipitated, and one equivalent of the nitric acid of the nitrate is converted into one equivalent of ammonia, the whole without any liberation of hydrogen. By passing a current of sulphuretted hydrogen through a solution of chloride of antimony mixed with a nitrate, the acid of this latter is converted into ammonia. Similar metamorphoses are effected by the contact of nitrates with

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(a) *Compt. rend.*, **Nov.** 30, 1846.

a solution of sulphuret of arsenic in potash, or with the hydrated protoxides of tin and iron.

I shall refrain from noticing any of the numerous memoirs on vegetable organic chemistry which have appeared during the years 1846 and 1847, as even a list of them would occupy more space than can be devoted to the whole Retrospect. I do this with the less regret as my object has not been by any means to give a complete report on the progress of chemistry, but rather to point out to medical men the direction in which chemistry tends, as a science; to show them, in fact, that it no longer consists of the history of oxygen and hydrogen, and pharmaceutical preparations,—that, in fact, it will shortly be included within the domain of mathematics; and, on the other hand, to show them that in proportion as it has left the shop of the apothecary it has entered the hospital, and is fast becoming the most useful instrument in the hands of the physician.

ON PHYSIOLOGICAL AND PATHOLOGICAL CHEMISTRY.

PHYSIOLOGICAL PHYSICS.—*Endosmose and Exosmose.*—Matteuci(*a*) has published another work in which he repeats the general views already put forward in his previous work, and also added a great many new views and experiments, especially on endosmose and exosmose, a few of which I shall notice here, as they are probably not generally known to most of my readers.

If a number of tubes with fine bores be immersed in a fluid it will rise in them exactly proportional to the size of the bore; the finer the bore the higher the fluid will rise. This action is called capillary attraction, and upon it depend a great variety of phenomena, not only in inorganic nature but also in vegetable and animal bodies, such, for example, as the effects known as imbibition, exosmose, and endosmose. In most animal and vegetable organs the structure resembles in effect a bundle of such tubes from the small spaces which exist between the parts. As the phenomena depend more on the nature and density of the fluids than on the substance of the tube, different fluids will ascend in the same tube, under otherwise similar circumstances, to an unequal height. If the blood happens to be altered in disease, so as to be rendered thicker or thinner by an increase or diminution of the fibrine or blood globules, or thinner by bleeding, or if it is modified by medicines, its capillary action will be changed,—water, oil, spirits, soup, &c., will disappear from the stomach quicker or slower than in a healthy natural state. The absorption of a liquid will take place more rapidly the higher its temperature is. This absorption or imbibition is not influenced by the pressure or by the moisture of the atmosphere; it produces heat and electricity; and as it plays a very important part in the capillary motion of the blood, it is probable that it has some influence on the development of the chemical activity of organic bodies. The cause of capillarity is the opposition of heterogeneous and ho-

(*a*) *Leçons sur les Phenomenes Physiques des Corps Vivants.* Paris, 1846.

mogeneous attraction between a fluid and the solid tube.   Endos-
mose and exosmose on the other hand depend on the mutual attrac-
tion of two fluids, one of which is more capable than the other of
freely wetting a porous solid which forms part of the combination.
Thus if we dip a piece of bladder or other animal membrane into
water it will be wetted and completely soaked with the liquid, but
if we dip it into spirit it will not be wetted.   If we take a funnel
to the stem of which a long tube is attached, and cover the mouth
with a piece of bladder or other animal membrane, and then fill the
funnel with spirits of wine, and place it with the bladder down-
wards in water, the water will pass into the funnel and mix with
the spirit, and a column of liquid will be forced up the tube.   The
moving power in this case is the force of adhesion between the water
and the bladder; the water ascends through the pores of the blad-
der as it would ascend through any other tubes, and comes in con-
tact with the spirit, with which it unites and is at once removed,
and this process goes on for a certain time; the height of the column of
liquid in the tube being in some degree an index of the power called
into action.   Other fluids having a strong tendency to unite with
water may be substituted with the same effect, and even solutions
of different solid substances, or in fact any two liquids of different
densities.   In case both the fluids thus placed in juxta-position are
capable of wetting the membrane or other porous diaphragm inter-
posed there will be a flowing in as well as out, and hence the names
which Dutrochet first gave the phenomena, of exosmose or flowing
out, and endosmose or flowing in. Gases are also capable of exhibi-
ting this phenomena, with the exception that in this case there is
no limitation, as they are capable of unlimited diffusion through
each other's mass. Matteuci applies this development of force to the
explanation of a great variety of phenomena; among others he men-
tions the experiments of Poisseuille's on the purgative and astringent
action of medicines. He observed in drinking Seidlitz water that an
endosmose of the serum of the blood took place with these waters,
and with glauber salts, sea water, and other saline solutions, through
the animal tissues.   This is exactly what occurs in all cases of
purging produced by such salts, the endosmose of the serum and the
solution of the salt in the intestines.   In such cases a quantity of
the serum is carried off by the bowels, and the rapidity of the action
is in proportion to the strength of the solution.

Muriate of morphia added to saline solutions diminishes the
endosmose of the serum with saline solutions in the intestines; hence
its action in diarrhœa.

Absorption is not merely an imbibition of a fluid by the tissues
with which it is in contact, but a transfer of the fluid to the blood-
vessels as in the experiment with the spirit mentioned above.   It is
in fact a true case of endosmose and exosmose, and will be facilitated
by the greater number of vessels which may exist in the part;
hence the lungs are better adapted for it than the cellular tissues,
and the skin least; hence, also, the rapid absorption of ether and

chloroform through the lungs. Absorption in general depends on the mass of the fluid already present in the body,—the more present the less is the absorption; it also changes with the temperature,— warm drinks are more rapidly absorbed than cold. The rapidity with which the fluid moves also facilitates it.

Exhalation is the opposite of absorption, and like it depends on the permeability of the vessels and on the mass of the liquid; is stronger in dry than in moist atmospheres, and frequently diminishes or increases tenfold. Imbibition, capillarity, and even molecular attraction, may overcome chemical affinity, and hence the organs of secretion cannot be looked upon as simple filtering apparatuses. Matteuci treats digestion and respiration in a similar manner. He also treats of the similarity and points of difference between electricity and the power of the nerves, and on several other points, upon which he, however, has communicated nothing new. The importance, however, of the general subject of endosmose renders it necessary to give a general sketch of the mode in which he applies it to explain phenomena.

Julius Vogel(*a*) has also published a very able memoir on the subject, in which, after having given a general description of the phenomena, he proceeds to apply it to the explanation of various animal functions, such as digestion, the secretion of sweat, of tears, of mucus, of milk, of saliva, of bile, and of urine. The length of the memoir, and the impossibility of condensing it within the limits which I could assign to a single essay, prevents me from giving an analysis of its contents, and I must consequently refer the reader to the original memoir, which has been fortunately translated into English and published by the Cavendish Society.

Magnetism. — Weber's(*b*) experiments on the action of the magneto-electrical current on the vessels and on the circulation of the blood show, that by the action of such a current the arteries of the extremities are diminished one-third or one-half their diameter, and that by its continued action they may contract to one-fifth or one-sixth, and cause the circulation to entirely cease. The contractions take place only after some time, but it continues even after the stream has ceased. When a weak current is employed the effects soon cease, but when a very strong one is used the artery loses its power of contraction, and an aneurism results. No certain results were obtained by its action on capillaries of one-ninety-sixth of a line in diameter, and it only produced very slight contractions in the veins. The action of the stream produced coagulation of the blood and cessation of the circulation most readily in the capillaries.

Action of Caloric.—Weber (E. H.)(*c*) found that cold diminishes

(*a*) *Die Geseze der Mischung der Flüsigkeiten und ihr Eindringen in permeable Subzanen.* Gottingen, 1846; also translated in the Memoirs of the Cavendish Society.

(*b*) *Wirkung d. Magnetelectrischen Stromes auf die Blutgefäse, Müller's Archiv.* Heft. 2 and 3.

(*c*) *Froriep's Notiz.*, 2 Reihe, Bd. 46, p. 69.

the ciliary motion, and that heat increases it. He also found(*a*) that a heat of about 124° F., and a cold of about 32° F., blunted the nerves of the tongue for some time, so as to destroy the sensation of taste; the organs of taste lose at the same time the power of distinguishing between heat and cold.

Electrical Endosmose.—Namias(*b*) states that when a positive current of electricity is passed through a liquid it produces a corresponding current in the liquid.

Respiration.—Lassaigne(*c*) gives us the result of his experiments on the carbonic acid contained in the atmosphere of confined buildings, that, owing to the law of the diffusion of gases, the carbonic acid does not exist in larger quantities near the floor, but is pretty equally diffused through the whole mass, and that, consequently, ventilation must have reference to the whole mass of air in a room, and not to a particular part.

Letellier(*d*) has found that all animals expire, at 0° F., double as much carbonic acid as at 30°; and between these extremes it diminishes as the temperature increases.

Becker(*e*) has published some observations upon Scharling's experiments upon respiration, in which he impugns Liebig's opinion that oxygen combines more readily with alcohol when it exists in the blood, than it does with the decomposed tissues; and comes to the general conclusion that the use of alcohol retards the formation of living tissues, and considerably diminishes the consumption of oxygen, and consequently of carbon. He also states that a healthy person expires, as carbonic acid, at least one-third more carbon than Liebig states; and this he accounts for by Liebig not calculating, in his tables, the amount of beer and spirits consumed by the persons on whom he experimented. He also considers that the amount of nitrogen which is daily given off is much greater than is usually supposed. In conclusion, he states that the smoking of tobacco diminishes the quantity of blood conveyed to the lungs, and at the same time induces the same conditions in the blood as the ordinary narcotics, and consequently retards the metamorphosis of the tissues, a fact which he quotes against Scharling, Liebig, and Vierordt's results, as they did not take this point into account.

Incubation.—Gobley(*f*) has made the interesting discovery that the yolk of the egg contains phospho-glyceric acid, an acid already obtained by Pelouze from the action of phosphoric acid on glycerine. He also obtained the albuminous substance termed by Dumas and Cahours, vitalline. Among the other substances which he obtained were margaric and oleic acids, which, as well as the phosphogly-

(*a*) Müller, *Archiv.*, Heft. 4.   (*b*) *Froriep's Notiz.*, Bd. 40, p. 263.
(*c*) *Bulletin de l'Academie de Medicine*, t. xi.; also *Comp. rend.*, t. xxiii. p. 188.
(*d*) *Froriep's Notiz.*, vol. xxxviii. p. 154.
(*e*) *Heller's Archiv.*, Heft. 5, p. 404.
(*f*) *Recherches sur le Jaune d'Oeuf; Jour. de Pharm. Annal. de Chim.*, &c.

eric acid, were combined with *ammonia*, margarine, oleine, choles-tearine, chloride of ammonium, traces of lactic acid and iron.   To these, Kodweis(*a*), who worked upon the same subject some years ago, adds stearic acid.

Sugar of Milk in incubated Eggs.—Winckler(*b*) has detected sugar of milk in incubated eggs.

Seraf. Cappezzuoli(*c*) has instituted some experiments to deter-mine the quantity and quality of the substances assimilated during the development of the egg, and immediately after the chick is dis-engaged from the shell.   His results are as follows:

1. During the incubation and the first few days of the existence of the chick, after leaving the shell, the quantity of fat does not diminish as rapidly as the albuminous substances.

2. During the incubation, the total diminution is very small, but becomes remarkable if the chick is left without food for some time after its expulsion from the shell.

3. Chickens fed on starch only, exhibit a diminution of their fat, and even when fed in the ordinary manner, a considerable dimi-nution of fat and of albuminous substance was perceptible, from which it may be concluded that the animal consumes more in the first days of its existence than it assimilates.

Baudrimont and Martin Saint-Ange(*d*) have published a very im-portant and complete investigation of the chemical appearances and changes which the egg presents during its incubation, from which the following results may be deduced:

1. Eggs diminish in weight during their incubation, as was al-ready well known.

2. Atmospheric air containing a certain amount of moisture, and a moderate temperature, are absolutely necessary.

3. They absorb oxygen, and at the same time evolve water, car-bonic acid, nitrogen, and some sulphur compound, not further known.

4. The loss of weight sustained by the eggs is always smaller than the sum of the water, carbonic acid, and nitrogen expired; it is even smaller when the carbonic acid is reckoned as carbon, which shows that the oxygen of this acid is derived from the air.

5. The oxygen necessary during incubation is partially ab-sorbed and partially employed in the formation of water and car-bonic acid.

6. The volume of absorbed oxygen is exactly equal to that con-tained in the evolved carbonic acid; and the volume of evolved ni-trogen is about one-half of the latter, or about a fourth part of the oxygen absorbed.

7. The fatty bodies are diminished in the egg during the time

(*a*) *Liebig's Annal.*, vol. xxxix. p. 261.
(*b*) Heller's *Archiv.*; and Chem. Gaz., No. 90, p. 280.
(*c*) *Polli's Annali di Chimica*, December, 1846.
(*d*) *Recherches sur les Phenomènes Chimiques de l'Evolution embryonaire des Oiseaux et des Batraciens ; Annal. de Chim. et de Phys.*, October and November, 1847.

of incubation, and at the same time the nitrogenous substances are altered in constitution, as is easily seen by the evolution of nitrogen.

8. The absorbed oxygen and the expired carbon and nitrogen stand in definite proportions to one another, and can be expressed by the following formula:—$8O + 2C + N$, which gives $4O + 2CO^2 + N$. If the oxygen be partially employed in the formation of water, we would have $4HO + CO_2 + N$, of which $H_4 C_2 N$ would have been derived from the egg.

9. The incubated egg is richer in oxygen than the fresh.

10. The inorganic elements can change considerably in their nature and relative proportions, as well as in physical characters.

11. The phenomena attending the development of the embryo exhibit a perfect example of nutrition, in which the nutriment is not assimilated until it has been exposed to the action of oxygen.

Proteine, Albumen, &c.—From the great number of memoirs published on these bodies, and from the important discussions to which they have given rise, particularly between Mulder and Liebig, I find it would be at present impossible to do justice to the subject, and shall, therefore, defer until the next number any notice of them, when I shall have more space at my command.

Blood.—Dumas's(a) investigations were principally directed towards ascertaining the relation of the blood globules to solutions of salts, and to the method of obtaining them pure, and also to their composition.

His process for estimating the blood globules is founded on the fact that they are not decomposed by a solution of sulphate of soda when exposed to a full current of air so as to maintain them of a full arterial colour. He first deprives the blood of fibrine in the usual manner, mixes it with three or four times its volume of a saturated solution of sulphate of soda, and throws the whole on a filter, care being taken that as thin a layer of blood globules as possible lies on the filter, otherwise they will not be fully oxidized, and will assume a purple colour, and will then dissolve in the fluid. During the washing of the globules, he causes, by a proper apparatus, a stream of air to pass over them through a fine tube reaching nearly to the bottom of the filter, the fluid being at the same time supplied as fast as it flows through it. In this way, in a few hours, five to six grammes of pure blood globules may be obtained.

He found that all alkaline salts possessed the same properties as the glauber salts, such as phosphate of soda, &c., as also salts of organic acids. On the other hand, chlorides of sodium and potassium appeared to act differently, for if blood be mixed with these solutions and then exposed to the action of oxygen, it will remain of a dark violet. Sal-ammoniac acts in a similar manner. Dumas remarks that there is probably some connexion between this action and the commonly received supposition that scurvy is produced by the use

(a) *Recherches sur le Sang.*, *Compt. rend.*, t. xxii. p. 900.

of salted meat, and also on the injurious action of sal-ammoniac on the blood.

It is worthy of remark that those substances which leave the blood the power of becoming arterialized by oxygen are exactly those which do not injure the blood globules, and by the use of which a colourless serum can be obtained.

Dumas has come to the general conclusion that the colouring matter of the blood has the power of assuming the peculiar arterial tint only so long as it exists in the form of globules, and that it loses this property when the globules are dissolved or changed, and that the colouring matter itself undergoes at the same time some alteration.

Dumas made comparative experiments with different portions of the same blood, from which he draws the following conclusions:

1. That the salts of the complex organic acids, such as tartaric and citric, &c., have less influence in preserving the integrity of the blood globules than salts with mineral acids.

2. That the salts with soda as a base preserve them better than those with potash or ammonia. It thus appears that between the integrity of the blood globules, the arterial condition of the blood, the phenomena of respiration, and the nature and the quantity of the salts of the blood, there is an important connexion.

Marchand(a) has examined the blood in reference to the statement of Dumas, that the blood globules are capable of a separate respiratory function outside the body, and has come to the conclusion that that statement is incorrect.

Dr. E. Harless(b) has made some very beautiful experiments on the action of gases on the blood globules, from which it results that the blood undergoes a series of changes under their influence analogous to those produced by salts. He exposed a layer of blood globules under the microscope to the action of different gases, by means of a peculiar contrivance. The constant result obtained was, that when the diameter of the blood globules of the frog, from treatment with oxygen, had become 0·011, and the width 0·007, by the action of CO_2, the first was increased to 0·014, and the latter to 0·009. Oxygen also made the contours dark and sharp, and the form a long oval with flattened poles, the membrane was granulated; carbonic acid made the contours round or oval, the granulations disappeared: resting on their edges they exhibited a considerable projecting convexity, which gradually disappeared towards the poles. Finally the structure of the membrane was rendered perfectly clear by CO_2, and by long-continued exposure to it the sac completely dissolved. Harless considers these charges to be the result of disturbances in the endosmatic and exosmatic currents.

From these facts it would appear that the cause of the change of

(a) Erdmann's and Marchand's Journal, Bd. 38, p. 273.
(b) *Inaugural abhandlung über den Einfluss der Gase auf die Form der Blut Körperchen von Rana Temporaria.* Erlangen.

colour of the blood was principally physical, was in fact produced by the absorption of the gas by the blood, and the change in the form of the globules, an opinion which Marchand has also come to.

Bonnet(*a*) has re-discovered a fact long since observed by J. Müller, that if one-half part of blood be directly received from a vein into a solution consisting of one part of sugar-syrup, and three of water, it may be filtered without coagulating, and that in some time the filtered liquid deposits a gelatinous coagulum of fibrine, similar to, but not so consistent as that of blood in inflammation. Before this coagulation took place he tried the effect of various substances on the mixture with the following results:—

1. Weak solutions of pure or carbonated alkalies; solutions of different neutral salts, as saltpetre, common salt, iodide of potassium, sulphate of soda, &c.; decoctions of vegetable substances, containing much tannin, &c.; very weak solutions of acids, as sulphuric acid, &c.; all alkaline or acid animal fluids, such as decomposed ammoniacal pus, urine, gastric juice, sour milk, &c.; do not allow the coagulation to take place.

2. Neutral animal fluids, such as fresh milk, solutions of very violent vegetable poisons, as acetate of morphia, belladonna, and even solutions of arsenious acid, had no influence on the coagulation of the fibrine or of the blood. He then divides those substances into four classes:—

1. Such as alter neither the blood globules nor the fibrine.

2. Such as act on both, namely, dissolve the globules, and prevent the coagulation of the fibrine.

3. Such as dissolve the globules, but have no action on the fibrine.

4. Such as retain the fibrine in solution, but do not destroy the globules.

He considers that a great many conclusions may be drawn from these results, as to the mode of action of these bodies as therapeutical agents.

Poggiale(*b*) has published the results of a number of analyses of the blood of different animals, from which nothing new can be deduced. He has also published an analysis of the blood of a new-born infant, from which he concludes that the blood of the placenta is similar in composition to the blood of the fœtus ; that the proportion of solid matter in the fœtal blood is greater than that in the blood of adults; that the blood of a new-born infant is rich in globules and poor in fibrine; that the quantity of albumen and fat is the same as in adult blood; that the iron is in greater proportion.

On the Existence of Carbonates in the Blood. — Liebig(*c*), from some well-conducted experiments, has come to the same conclusion

(*a*) *Lettre à M. Dumas sur le Sang.* ; *Annal. de Chim. et de Phys.*, t. xxi. p. 189.

(*b*) *Recherches Chimique sur le Sang.*, *Compt. rend.*, t. xxv. p. 110.

(*c*) *Annal. der Chem. und Pharm.*, Bd. 57, p. 126.

as Enderlin, that there are no carbonates in the blood of oxen. He did not find either sugar or urea.

Marchand(a) has come to the same conclusion as Scherer, that the opinion of Enderlin as to the existence of tribasic phosphate of soda (3 Na O $+$ P O$_5$) in the blood is incorrect. With reference to the conclusion of Liebig quoted above, he states that he has repeated his experiments with the same result, but does not, however, come to the same conclusion. He accounts for no evolution of CO$_2$ having been observed in Liebig's experiments, by supposing the greater part of the gas set free on saturating a small quantity of a carbonate dissolved in a large quantity of water, to have been absorbed, and consequently no effervescence produced, and in proof of this he brings forward several conclusive experiments, and among others shows that a fluid containing 2 Na O, H O $+$ P O$_5$ in solution, when saturated with carbonic acid, scarcely lost any even under an air-pump. Marchand, therefore, adheres to his former opinion, that the blood contains carbonates, an opinion which is fully confirmed, at least in the case of the blood of the Herbivora, by the beautiful and conclusive experiments of Lehmann(b). Heinrich Rose(c) appears also to consider that carbonates may exist in the blood.

Urea in normal Blood.—Dr. Strahl(d) states that he has been able to detect urea in normal blood.

PATHOLOGICAL CHEMISTRY OF THE BLOOD.—Dujardin and Didiot, Surgeons to the Hospital of Val de Grace, at Paris, have applied Dumas's method of examining the blood globules to diseased cases. In thirteen slight cases of typhus, the blood globules remained on the filter, or only a small portion went through. In seven severe cases, notwithstanding a strong current of air, they went through here and there, or in the form of red streaks; and this appearance of dissolution in the blood globules appeared to be in direct proportion to the violence of the disease. The globules behaved themselves similarly in spontaneous erysipelas, phthisis, many organic diseases of the heart, and typhoid inflammation of the lungs; while in pleurisy, simple pneumonia, acute catarrh, acute rheumatism, the serum passed through clear and without any globules.

Plethora, Anæmia, &c.—Becquerel and Rodier(e) found the chemical constitution of the blood in plethora almost normal. In simple chlorosis they also found that the composition of the serum was normal, and that the change which takes place in the blood of patients labouring under this disease is confined to the blood globules. On the other hand, in symptomatic anæmia the albumen of the serum is considerably diminished.

Sir Henry Marsh(f) has given, in his admirable paper on chlo-

(a) *Journal für Prak. Chem.*, Bd. 37, p. 321.
(b) *Journal für Prak. Chem.*, Bd. 40, p. 133.
(c) Chemical Gazette.
(d) *Preuss. Vereinzeitg*, No. 47.
(e) *Gaz. Med.* ; the whole memoir is contained in Nos. 26, 27, 32, 33.
(f) Dublin Quarterly Journal, No. IV. November, 1846.

rosis, some chemical observations on the blood in that disease, from analyses by Dr. Hill, which tend to show that the disease does not consist in a diminished quantity of blood, but in an altered quality. In chlorosis, in fact, the blood undergoes a very remarkable change: its specific gravity is lowered, the clot is small and firm; the serum bears too large a proportion to the crassamentum; water is in excess; the red corpuscles are far below the healthy standard in quantity; their appearance, however, under the microscope, is natural; and the fibrine, in the majority of cases, is normal.

In hæmorrhagic diseases, on the other hand, the specific gravity is seldom much below, and occasionally even exceeds the healthy standard. The clot bears too large a proportion to the serum; the fibrine is less than in healthy blood, or rather its proportion to the globules is less than in healthy blood; the quantity of red globules is either absolutely increased, or their proportion to the fibrine is larger than in normal blood. The quantity of solid constituents frequently exceeds that of the normal fluid; a buffy coat is scarcely ever observed except where fever or inflammation is present.

Inflammation.—Zimmermann(*a*) makes the important observation, that in pneumonia, if the patient be bled on the first day of the disease, and that no increase of the fibrine is observed, its increase afterwards cannot be assigned as the cause of the disease.

Intermittent Fever, Dysentery, Typhus.—Leonard and Foley(*b*) have published a most excellent memoir under the title given below, on the composition of the blood in different diseases. They adopted in their analyses the process of Andral and Gavarret, and their results can, therefore, be compared. We can only give a few extracts, showing the results at which they arrived with reference to each of the constituents.

Fibrine.—In febris intermit. and remit. simplex, the mean quantity of fibrine was 2·5. Andral and Gavarret found, as a mean, 3·4. The quantity appears to diminish in repeated attacks of fever, but yet not to fall below the minimum normal state. During the change of the intermitting type into the remittent, no constant change in the quantity could be observed. In a complication of intermitting fever with pneumonia, the quantity of fibrine in the latter was increased. In violent cases the fibrine did not appear to be changed, and consequently it is not much influenced, except in a few cases, by inflammation. The frequent occurrence of hypertrophy of the spleen does not always depend, as Andral thought, on the diminution of the fibrine. The use of sulphate of quinine, to the amount of sixteen grains daily, for several days, had no influence on the quantity of fibrine.

Blood Globules.—They took 152 as the physiological maximum, according to Becquerel and Rodier, and as physiological minimum,

(*a*) *Uber die Analyse des Blutes.*

(*b*) *Recherches sur l'Etat du Sang dans le Maladies endémiques de l'Algérie; Mem. de Med. Chirurg., &c., Militaires,* t. lx. pp. 135 to 209.

110, according to Andral and Gavarret. As a mean of all cases
(62) they found 111; as a mean of recent cases, 113·2; as a mean
of relapses, 108·8. It results from this that, with the duration of
the disease, the blood globules diminish.

Solid Constituents of the Serum.—In thirty-two cases out of sixty-
two, these were within the physiological maximum of 91 (Andral and
Gavarret), and the physiological minimum of 68 (Becquerel and
Rodier); in ten cases it exceeded, and in twenty it sunk below the
minimum.

They also investigated each constituent of the serum. The or-
ganic constituents exceeded the mean (72 A. and G.) in eighteen
cases, and fell below it in thirty-three. The inorganic exceeded the
mean (8) eighteen times, and fell below thirty-two times. In the
complicated cases, the diminution was almost constant. In intermit-
tent fever, the albumen of the blood was also in general diminished.
In many of these cases the urine contained no albumen, which is
contrary to the opinion of Andral, that a diminution of the al-
bumen only takes place in those cases where it is carried off by the
kidneys.

The constituents of the serum soluble in boiling water (extrac-
tive matter, soluble salts) were always increased. The authors
believe, from these facts, 1st, that the fibrine of the blood does not in-
crease at the cost of the albumen, and *vice versâ;* 2nd, that the blood
globules do not increase at the cost of the albumen ; 3rd, that the
quantity of free salts of the blood, namely, the alkaline salts and
free alkalies, do not appear to have any influence on the quantity of
fibrine and albumen.

Water in the Blood.—Their researches on this point led to the
following results:—In the cases where the quantity is increased, the
globules are generally diminished. The solid constituents of the
serum are also either diminished, or their quantity is normal.

When the water is normal, the blood globules are also generally
so, and also the solid constituents of the serum, although there are
greater proportional variations in the latter. Diminution of the
water takes place very seldom, and always occurs with the increase
of the globules, while, at the same time, the solid constituents of
the serum are likewise either increased or remain normal.

The general results to be drawn from these investigations may
be summed up as follows:—The blood during intermitting fever
undergoes some change from which a series of secondary appearances,
such as anæmia, dropsical and scorbutic attacks, are easily explained.
The diminution of the globules (probably also a diminution of their
power of absorbing oxygen) explains the prostration of the entire
constitution and the occasional disturbances of the circulation. The
diminution of the fibrine explains the ecchymosis in the skin and in
the cellular tissues, the bleeding from the nose and gums, the gan-
grene of the mouth which sometimes occurs, and the pains in the limbs.
The diminution of the albumen explains the hydropsical swellings,
anasarca, ascites, and probably also the watery diarrhœa, which

always closes the last scenes of persons weakened by fever. These changes of the blood are not peculiar to intermittent fever, as they also occur in many other diseases.

Dysentery.—They examined the blood in six cases of this disease. They were principally those in which inflammatory symptoms predominated with violent fever, heat, headach, &c. In all the bleeding was serviceable. The fibrine was in general increased, the globules had a tendency to increase; the solid constituents of the serum were never increased, being generally normal; the organic constituents had a tendency to diminish; the inorganic were normal; the albumen, in the three cases in which it was determined, was diminished. The constituents soluble in boiling water, in the four cases in which they were determined, were considerably increased. The constituents soluble in boiling alcohol, as in the fever cases, gave no definite results. The water was four times increased and twice normal.

Typhus.—Becquerel and Rodier, from their investigations of the serum of blood in typhus, come to the following conclusions:—at first it differs very little from the normal, but during the course of the disease its density diminishes, both from the influence of the disease and the diet, and the quantity of water increases and the albumen diminishes. In violent cases of typhus the blood globules lose the property of absorbing oxygen.

Puerperal Fever—Hersent(a) draws the following conclusions from his researches:—

1. In cases of violent puerperal fever the quantity of water is very much increased, and the blood globules and albumen diminished. 2. In proportion as these changes are slight, so is the disease. 3. The fibrine is in general not diminished, nay, even sometimes increased. 4. There were some cases where, the fibrine having been diminished, the blood showed symptoms of dissolution.

5. Probably the change of the blood precedes the appearance of the disease, but it cannot be considered as its cause, although it increases the violence of the disease.

Becquerel and Rodier have confirmed by new experiments the fact that during pregnancy the blood globules diminish, and the fibrine and albumen slightly increase, but at the same time the specific gravity of the serum diminishes. This latter fact they imagine may give rise to many forms of dropsy, which arise towards the end of pregnancy; but, according to Vogel, the results are caused principally by mechanical disturbance of the circulation.

Scorbutus.— Becquerel and Rodier(b) conclude from their researches, 1st, that the old and generally received opinion that the blood in scorbutus undergoes a species of dissolution, is not correct, nor is the opinion of Majendie and of Andral and Gavarret, that the

(a) *Recherches sur la Composition du Sang dans les Fièvres Puerperales ; Gaz. Med. de Paris,* No. 51, p. 991.
(b) *De la Composition du Sang dans le Scorbut; Gaz. Med. de Paris,* No. 26.

alkaline salts are increased, borne out; 2nd, the blood globules and soluble albumen were sensibly diminished, which Vogel accounts for by the loss of appetite; 3rd, the fibrine, contrary to the generally received opinion, was not diminished, but was even, in some cases, increased, and did not differ in its properties from that of healthy blood; 4th, the only positive change observed was a very considerable diminution of the specific gravity, which is much less than it ought to be from the quantity of solid matter contained in the blood. This curious fact cannot, as yet, be accounted for.

Dr. Neligan has communicated, in his paper on sea scurvy(a), two analyses of the blood, made by Dr. Aldridge, in this disease, which had reference principally to the inorganic constituents. The most remarkable difference is observed, in these analyses, in the total amount of inorganic matter, which, in one of the cases, was nearly double the quantity contained in normal blood. There was a marked difference between the amount of phosphoric acid in the two cases, although that which contained the least was still by no means below the normal standard. The potash and sulphuric acid were abundant, notwithstanding, as Aldridge remarks, that the food to the use of which scorbutus is usually attributed is deficient in them. The total amount of solid matter contained in both specimens was remarkable, and especially in one, which contained in 1000 parts only 684 of water, and 316 of solid matter!! It is much to be regretted that the proportion of fibrine, albumen, and bloodglobules, was not ascertained in this most remarkable case. It is probable, however, that the blood-globules were in excess, which is not in accordance with the experiments of Becquerel and Rodier. Majendie, Andral, and Gavarret's opinion, that the alkaline salts are increased, is fully borne out, particularly in the case in which the large amount of solid matter was observed.

Carcinoma.—Heller(b) has arrived at the following conclusions from his investigations on this disease:—

1. The opinion of Engel, that this disease belongs to the class of *albuminous*, that is, to an increase of the albumen in the blood, is disproved by these investigations. For the blood in this disease, on the contrary, as in all others in which there is a tendency to new formations,—inflammation, rheumatism, tubercle (and probably also secondary syphilis),—is richer in fibrine.

2. In the higher grades, and in long-continued cases of cancer, the blood-globules decrease, and the water increases.

Heller also continually found in the blood of patients suffering from cancer, peculiar shining, golden scales under the microscope, which, of course, he was unable, from want of material, to determine the nature of, but which Vogel considers to be cholestearine.

Mania.—Heinrich's(c) results may be stated as follows:—In all

(a) Dublin Quarterly Journal, No. viii. November, 1847.

(b) *Pathologische Chemie der Krebskrankheit;* Heller's *Archives für Chemie und Mikroskopie,* Heft. 1. p. 28.

(c) Heller's *Archives,* Heft. 5.

investigated cases of recent mania, the blood did not exhibit any great variation from the normal composition. The blood of a patient labouring under this disease corresponds to that in a mild case of hydraemia. Mania, therefore, causes no peculiar condition of the blood, but is rather dependent on the existing condition of the body. In the seven cases examined, the fibrine was not increased, and consequently there was no acute inflammation.

Diseases of the Spine.—Becquerel and Rodier have analysed the blood of twelve patients labouring under diseases of the spine, with the following results:—

When the spinal disease is accompanied by paraplegia, the blood globules will be generally found to be diminished, and that in proportion as the patient is debilitated. The fibrine is at one time normal, at another increased; this latter sometimes from intervening inflammation, but also without. The serum has, in general, a high specific gravity, and is always rich in solid constituents, as well in albumen as in extractive matter and fat.

Bright's Disease.—Becquerel and Rodier have published a great number of analyses of blood in this disease, which confirm their former results, namely, that in this disease, in general, the globules diminish whilst the fibrine remains normal, except in inflammatory complications, where it appears to be increased, whilst the albumen is considerably diminished.

Pasquale la Cava(*a*) obtained 0·684 parts of pure urea from 1000 parts of the blood of a patient labouring under this disease.

Diabetes mellitus.—A great number of memoirs have appeared on this disease, of which we can only notice a very few, from our want of space.

It is well known that starch may be converted into dextrine and sugar by the influence of certain animal secretions, such as the saliva, pancreatic juice, &c. Majendie(*b*) has found that a great number of other animal substances possessed the same property, and, among others, the blood, not only in the body but outside it. This fact he has ascertained by a number of beautiful experiments, which want of space alone prevents our giving here. The natural consequence of these results is, that we must naturally seek for the cause of diabetes in the blood or in the process by which the blood is formed, that is, in the act of digestion; and on this basis two theories have been formed which have gained considerable reputation, the one by Bouchardat and the other by Mialhe.

Bouchardat's(*c*) theory is as follows:—The sugar of diabetes is principally, if not entirely, formed from starch and bodies belonging to the same chemical series. Diabetic patients digest this starch differently from healthy persons. Their stomachs contain a consi-

(*a*) *Annali di Chimica applicata alla Medicina*, Aprili, 1846, p. 242.
(*b*) *Note sur la Présence normale du Sucre dans le Sang.*, *Gaz. Med.*, No. 38, p. 734.
(*c*) *Journal des Connais. Med. Chirurg.*, No. 4, April, 1816.

derable quantity of a nitrogenous body in a state of transformation, resembling that which vegetable albumen, &c., undergoes when it forms diastase. Indeed Bouchardat thinks from his experiment that this substance is diastase. By this, and by the large quantity of water which they drink, owing to continued thirst, the starch is rapidly converted into grape sugar, which is as rapidly taken into the blood. A quantity of grape sugar thus gets into the blood, which the lungs cannot burn off, and the excess must of course pass off by the kidneys. By this rapid solution and absorption of the food, and its expulsion again, unchanged, through the kidneys, fresh food will be required, hence the continual hunger of diabetic patients. But as the food consumed cannot be employed as nutrition, the patient wastes away, and his organs of digestion suffer from the excessive and vain employment of their functions. The case is different with healthy persons. The formation of sugar commences with them also in the stomach, but slowly, and is only completed in the intestinal canal; a very natural consequence, which Bouchardat and Sandras proposed in 1842.

Mialhe's(a) theory may be briefly stated as follows:—The starch of the food is converted into grape sugar, not only by diabetic persons, but also by healthy individuals, but in the latter cases it will be decomposed or burned off by the presence of alkalies, and under the influence of oxygen. This decomposition does not take place in diabetes, owing to the deficiency of alkalies in the blood, and the sugar, as such, is passed off by the kidneys. And this deficiency of alkalies is, according to him, to be accounted for by the suppression of the secretion of acid perspiration which always occurs with diabetic patients, and from the excessive consumption of acids which may be sometimes observed in this disease. His mode of treating the disease is, of course, founded on this view, namely, the administration of alkalies.

Costes(b) is of opinion that the disease cannot be accounted for by a purely chemical theory, as he found that it had been cured in a great variety of ways, some of which were incompatible with the theories given above, and from many other facts, particularly with regard to its cause.

Scharlau(c) is of opinion that diabetes is a disease which first originates in the spinal marrow, an abnormal vegetative function of the nervus sympathicus exhibiting itself in an abnormal process of digestion, and the consequence of which is that the nervus vagus is sympathetically affected, and an abnormal condition of the liver induced, which prevents the sugar from being converted into bile, and the excess is consequently carried off by the kidneys ; he is of

(a) *Traitement Raisonné par les Substances Alcaline ; Journal de Med. et de Chirurg, pratiques ;* Janvier et Fevrier, 1846.
(b) *Quelques Reflexions sur le diabete Sucré ; Jour. de Méd. de Bourdeaux,* Juillet, Aout, et September, 1846.
(c) *Die Zukerharnruhr nach eigenen Untersuchungen,* Berlin, pp. 100. 8vo.

opinion, therefore, that all attempts at cure must have reference solely to the spine.

The opinion of Scharlau has only the advantage of directing the attention of pathologists to the disturbance of the secretion of the bile; but it has also the disadvantage of resting on a mere supposition, namely, that the sugar is converted into bile, of which we have no proof whatever, a disadvantage which the theory of Bouchardat and Sandras avoids. They suppose that the blood can only burn off a certain quantity of sugar in a given time. If too much sugar comes into the blood from the stomach and intestinal canal, the excess will always be separated by the liver, and will come with the bile into the intestinal canal, and thence again into the blood. The liver is thus a sort of regulator of the metamorphosis of sugar in the circulation. This theory thus accounts for the fact that a deficient secretion of bile produces a greater amount of sugar in the blood, and an increase in its saline constituents, and consequently the production of diabetes. Bouchardat has also made animals diabetic for a time by causing them to consume a very large amount of sugary food.

But Bouchardat's theory does not explain how the grape sugar is decomposed in the blood of healthy persons. Mialhe endeavours to explain the question by the presence of alkalies. These alkalies are deficient in the blood of diabetic patients, and therefore the sugar is passed off undecomposed. But still this is an hypothesis, but it is one deserving of being tested by accurate chemical experiments.

Vogel makes the judicious remark, however, that if the theory of Mialhe be correct, why are the alkalies deficient in the blood of diabetic patients ? The explanation of Mialhe appears to him untenable, that it arises from the suppression of acid perspiration, because the quantity of acids thus given off is so extremely small, that a slightly increased acidity in the large quantity of urine passed would be more than sufficient to counterbalance it; and, as is well known in the commencement of the disease, the perspiration is often normal; and we may also remark, that there are a great many diseases where the perspiration ceases to be acid, and is often partially suppressed, and yet the sugar in the urine is not increased. Vogel further states that probably the opinion of Scharlau, that the disease arises from the increased thirst, may explain why, from the increased secretion of urine, and the consequent frequency of drinks, a greater excretion of salts, and especially of alkalies, may take place. This explanation, of course, remains to be proved by accurate experiments. But still Scharlau's opinion does not explain why there is increased thirst, for that which he has given is pure nonsense clothed in the metaphysical jargon of the anti-chemical school of physiologists, where a new name hides ignorance. Would that physiologists would give up metaphysics, and endeavour to become more *positive* and less verbose !

L. Lehmann(a) gives an account of a case of diabetes, attended with

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(a) *Dissertation, &c., Erlangen,* **22** pages.

tuberculosis pulmonum, which was temporarily relieved by the use of animal food and cod liver oil. He detected sugar in the sweat, but not in the saliva ; the blood also contained it. In one analysis the blood globules were deficient, and the solid constituents of the serum very large. The urine in this case contained neither urea, uric acid, nor hippuric acid. The patient perspired profusely, which shows that the suppression of the perspiration is not a general cause of the disease. In corroboration of this opinion, I may mention that Aldridge long ago stated that sugar was a normal constituent of the urine; and that he in many cases detected it in the sweat, mucus of the nose, &c.

Flesh, and the Substances derived from it.—Liebig(*a*) has published a beautiful memoir on the juices of flesh, which from its importance will mark an epoch in physiological chemistry.

Chevreul discovered some years ago in meat broth a crystalline substance to which he gave the name of creatine, but from want of material, was unable to examine its properties very minutely, or to determine its composition. This Liebig has completely done. He obtained it in considerable quantity from the flesh of various animals, but most abundantly from the muscles of the heart of oxen. Creatine is soluble in water, from which it may be obtained in fine, shining needles, grouped like sugar of lead ; in cold alcohol it is almost insoluble. It is a neutral body which dissolves in weak alkaline or acid liquids, without experiencing any alteration, but its properties are changed in the presence of concentrated acids, or of caustic alkalies. Strong acids convert it into an organic base, possessing some very remarkable properties, to which the name of creatinine has been given. Creatinine is formed in the presence of hydrochloric and sulphuric acids by the mere elimination of four atoms of water. It is more soluble in water and alcohol than creatine ; its aqueous solution is caustic to the taste, like dilute ammonia, which it expels from its combinations. It turns reddened litmus paper blue, and forms, with all acids, salts, some of which are remarkable for their beauty, particularly the compound with platinum, which forms very fine crystals of a golden colour. Creatine may be represented by the formula $C_8N_3H_7O_4+2$ Aq., which contains the elements of one atom of glycocoll or sugar of gelatine, and one atom of ammonia. Creatinine is represented by the formula $C_8N_3H_7O_2$, which is equivalent to the elements of one atom of caffeine and one atom of amidogene.

Creatine and creatinine are constant constituents of human urine. The nitrogenous substance which combines with chloride of zinc, discovered by Pettenkofer in urine, is in fact a mixture of both.

If creatine be boiled with ten times its weight of hydrate of barytes, ammonia will be given off, and a new base produced called sarkosine. Carbonic acid remains at the same time in combination with the barytes. The formula of this new base is $C_6NH_7O_4$, which,

(*a*) *Ueber die Bestandtheilen der Flüssigkeiten des Fleisches ; Annal. der Chem. und Pharm.*, Bd. 62, Heft. 3.

extracted from that of creatine, leaves the formula for one atom of urea. In the reaction there is also a small quantity of a substance similar to urethan formed.

Liebig also proved that lactic acid was a constituent not only of the flesh of the herbivora but also of the carnivora, and he obtained at the same time a new nitrogenous acid, to which he has given the name of inosinic. It does not crystallize, and many of its properties resemble lactic acid, and its formula is $C_{10}N_2H_7O_{11}$.

In his examination of the inorganic constituents of the juice of flesh, he obtained some very singular results. The inorganic constituents of the juice consisted of the alkaline chlorides, phosphates of soda, of lime, and of magnesia. The sulphates were totally absent. The ash gave a strongly alkaline solution, which, with the exception of that of the hen, contained salts of phosporic acid combined with two, and with three atoms of alkali, which was shown by its reaction with nitrate of silver.

The relation between the potash and soda salts in the juice of flesh and in the blood is very remarkable. To an equivalent of potash the blood of an ox contains twelve to thirteen equivalents of soda. This relation is reversed in the aqueous extract of the flesh of the same animal. From this it follows that the blood-vessels in the flesh supply a larger quantity of potash salts than of soda ; that consequently the blood-vessels have a different amount of permeability for each part of the body. This is most remarkable in the case of the secretion of milk, in which potash salts predominate. The constant occurrence of phosphate of soda in the blood, and of phosphate of potash in the juices of the flesh cannot certainly be accidental, but, on the contrary, must have connexion with the different functions ; and hence the necessity of giving common salt with the food of animals in inland countries, where soda is not present in the fodder.

The juice of flesh, as is well known, reacts acid. This property Berzelius attributed to the presence of lactic acid, without, however, having proved it by any direct analysis ; this, however, as we have mentioned above, Liebig has done. Now the quantity of phosporic acid present in the juices of flesh is sufficient to neutralize the whole of the alkalies existing in them, and if no organic acids were present the resulting salts would be neutral. The quantity of organic acids contained in them, on the other hand, is not sufficient to neutralize the whole of the alkalies found, and consequently if no phosphoric acid existed in them they would, in this case also, react alkaline. The two classes of acids, however, are more than sufficient to neutralize the alkalies, and consequently acid salts of both must result, and to these the acid reaction of the juices must be attributed. In proportion as one acid is increased will the quantity of the other set free be also increased. Hence Liebig concludes that if the stomach receives from the blood the acids which are contained in the juices of the flesh, the blood must, during digestion, become more alkaline, and that, in order to return to its normal condition, it must either receive a quantity of acid from the muscles, or the excess of

alkalies must be transferred to the muscles, or removed by the kidneys. Liebig further concludes that, if the urine of animals be acid before digestion, it must become neutral or slightly alkaline during that process.

As blood and lymph are alkaline, and are only separated from the acid juices of the flesh by animal membranes permeable to both fluids, a great source of electricity must arise; and Buff, at the suggestion of Liebig, has constructed a voltaic pile, composed of disks of felt saturated with blood, and of brain and flesh, which produced a strong deviation of the galvanometer needle, the direction of the current being from the blood to the flesh.

Lymph.—Geiger, apothecary in Stuttgart(*a*), had an opportunity of examining the lymph from the lymph vessels of the foot of a horse, under the direction of Schlossberger. It was collected from a small crack beneath the fetlock of the hind foot.

The drops of fluid, which flowed out with varying rapidity, were clear like water, and, singly, almost colourless; in greater quantity, of a slightly yellowish colour, of a disagreeable smell, and a slightly salt taste. The specific gravity at a mean temperature was 1017. Immediately after it had flowed out a colourless gelatinous coagulum formed in it, which, in the course of a few hours, adhered together and floated on the surface. The subnatant liquid was perfectly clear, slightly yellowish, and exhibited under the microscope but very few globules.

It gave no reaction with test papers. The serum scarely became clouded on its being heated, and even after being boiled for ten minutes only a few flakes of albumen were thrown down; but when a few drops of acetic acid were added to the boiling fluid, a considerable precipitate was obtained. This, however, did not take place on adding it to the cold liquid. An addition of rennet (calf's stomach) and milk sugar scarcely troubled the liquid. When the serum was evaporated, a film was formed which was renewed when removed. On incinerating the residue, an ash was obtained which strongly effervesced with acids, and contained carbonic, phosphoric, sulphuric, and hydrochloric acids, combined with potash, soda, lime, and a trace of oxide of iron.

The fresh lymph, treated with potash, even in the cold, showed the presence of ammonia. Carbonic acid could not be detected with accuracy by the addition of other acids to the fresh lymph. The following is the result of its analysis:

Water, ...	983·7
Fibrine, ...	0·4
Albumen, ...	6·2
Extractive matter, ...	2·7
Fixed salts, ...	7·0

Together with traces of fat and of salts of ammonia.

(*a*) *Analyse von Lymphe, Archiv. fur Phys. und Heilkunde,* Jahr. 55, pp. 391.

Schlossberger has added some observations to this paper, which tend to throw considerable light on the nature of this substance, about which so much is said, and so little in reality known.

He first shows the purity of the lymph by the statement of the veterinary surgeon, by the white placenta of fibrine, and by its behaviour under the microscope, by which he was able to distinguish globules of different sizes and form, the largest of which were smaller than blood globules, evidently granulated, with sharp edges, and often with a visible nucleus; some were round and some elliptical.   The smallest of them, in which no nuclei could be discovered, perfectly resembled the isolated nuclei.   Both varieties were perfectly insoluble in ether.   Neither blood globules nor fat globules could be detected.

The time of coagulation varied very much; from four to eighteen minutes after the discharge of the fluid.   At first the placenta had a jelly-like transparency; afterwards it contracted considerably, and became opaque and more consistent; it never assumed a red tinge in the air.   Schlossberger also mentions, as remarkable, the behaviour of the albumen, on heating the liquid, which was perfectly neutral. Although *free*, alkalies are not necessary to impart to albumen many of the properties of caseine, for it exhibits these characters when simply combined with soda; still it is probable that the presence of ammoniacal salts, which often react acid, had masked the alkaline reaction of the albuminate of soda.   The lymph serum was not coagulated by ether.

In some experiments which Schlossberger made with the horse, by adding several salts to its drink, and, among others, ferrocyanide of potassium, he only obtained a negative result, even after two hours.

The quantity of lymph which flowed from the horse daily amounted to from three to five pounds.   It suffered from this for several years, but did not appear to waste, although it lost strength.

Feathers.—Von Gorup Besanez(*a*) has found in the feathers of birds a considerable amount of silica, but no sulphates or chlorides.   Henneberg has found silicate of soda or potash in the blood of fowls, a fact which explains the presence of silica in the feathers.

Gelatine.—Schlieper(*b*) has repeated the experiments of Persoz, Marchand, and myself, on the products of the oxidation of glue with chromic acid, and in general confirmed the previous results.

He obtained the following products:—prussic, acetic, valarianic, and benzoic acids, and further, two oily products, to which he has given the names of valeronitrile and valeracetonitrile, the former of which is decomposed into valerianic acid and ammonia, and the latter into acetic acid, valerianic acid, and ammonia.   I consider, from

(*a*) *Erdmann und Marchand's Journal,* Bd. xxxix. p. 244.
(*b*) *Ueber die Zersetzungs Producte des Leims durch Chromsäure ; Liebig's Annal.,* Bd. lix., p. 3.

my experiments, that both prussic and benzoic acids are only se-condary products, and consequently not of constant occurrence.

Hippuric Acid.—Dessaignes(*a*) has made the beautiful discovery that hippuric acid is decomposed into benzoic acid and sugar of gelatine, by boiling it for half an hour with hydrochloric acid. This is a very simple decomposition, nothing else being produced, for if we subtract from one atom of hippuric acid, $C_{18}H_9N_2O_6$, one atom of benzoic acid, $C_{14}H_6O_4$, there will remain $C_4H_3N_2O_2$, which with $1\frac{1}{2}$ atoms of water is equal to half an atom of glycocoll, or sugar of ge-latine. Dessaignes also found that nitric, dilute sulphuric, and even oxalic acids produce the same effects, and that these acids remain in com-bination with the sugar of gelatine, giving rise to a class of salts which have the property of acting as acids, and forming with salts of metallic oxides double salts, which are perfectly analogous to those formed with urea, described by Werther.

Mulder(*b*) was led from these experiments to repeat his examination of the sugar of gelatine, and has found that the composition formerly assigned by himself, Marchand, and Boussingault, was not perfectly correct, which he attributes to some impurities. The formula which he now proposes is $C_8H_{10}N_2O_8$, or, in the anhydrous state, $C_8H_8N_2O_6$. Laurent has verified Mulder's results, but he assumes a formula one-half that of Mulder's, namely, $C_4H_5NO_4$.

Horsford(*c*) assumes from a great number of experiments the same formula for glycocoll as Laurent. He has analysed a great number of the compounds which it forms as a base and as an acid, and the double compounds which it forms with salts. He starts the question whether glycocoll and benzoic acid may not as such form parts of the animal tissues, of albumen, fibrine, &c. In sup-port of such an opinion he brings forward the facts that gelatine, by the action of sulphuric acid or potash, yields benzoic acid and gly-cocoll, and that when it is treated with chromic acid, it also yields benzoic acid. But he could not detect it in the urine, even after he had taken four grammes of it. He found, however, in the latter case, that the quantity of urea and uric acid was considerably in-creased. This curious effect he promises to pursue further.

Saliva.—Pettenkofer(*d*) has proved beyond all doubt the presence of sulphocyanogen in the saliva.

Cappezuoli(*e*) says that the sputa of persons labouring under pneumonia is capable of converting starch into sugar.

Wright(*f*), who has contributed so much to this branch of phy-

(*a*) *Nouvelles Recherches sur l'Acide Hippurique l'Acide Benzoique et le Sucre de Gelatine; Annal. de Chim. et de Phys.*, 3me serie, t. xvii. p. 50.

(*b*) *Untersuchung über den Leimzuker. Erdm. u. Marchand's Journ.*, Bd. xxxviii. p 294.

(*c*) *Ueber Glycocoll und einige seine Zersetzungs Producte; Annal. der Chem.*, Bd. lx. p. 1.

(*d*) *Ueber den Schwefelcyangehalt des Menschlichen Speichels;* Buchner's *Repertorium.*, Bd. xli. p. 289.

(*e*) *Gaz. Toscana*, No. 21, 1845.   (*f*) Chem. Gaz., No. 88, p. 240.

siological and pathological chemistry, gives the following as the ordinary constituents of saliva:

Water, ...	988·10
Ptyaline, ...	1·80
Fatty acid, ...	0·50
Chlorides of sodium and potassium, .	1·40
Albumen, with soda, ...	0·90
Phosphate of lime, ...	0·60
Albuminate of soda, ...	0·80
Lactate of potash and soda, ...	0·70
Sulphocyanide of potassium, ...	0·90
Soda, ...	0·50
Mucus, with ptyaline, ...	2·60

Mialhe(*a*) has investigated the nature of the active principle of the saliva, which he considers to be analogous to diastase, and which can be isolated in the same manner as it. According to him it is prepared by filtering the saliva, and treating it with five or six times its weight of absolute alcohol. Being insoluble in this liquid, it is precipitated in white flakes. These are collected on a filter, and placed whilst moist in thin layers upon a plate of glass, dried in a current of air heated from 104° to 122° F., and preserved in a well-closed bottle. Its proportion in human saliva rarely exceeds $\frac{2}{1000}$ths. It is a white or whitish-grey, amorphous solid, insoluble in alcohol, but soluble in water and dilute alcohol. Its aqueous solution is neutral, and is not precipitated by the diacetate of lead. When set aside it changes and becomes acid. The acid which it produced is either butyric or one very similar to it. This principle has no action upon albumen, &c., nor on cane sugar, gum arabic, or woody fibre, &c.; but it has a remarkable action on starch, which it readily converts into dextrine and glucose. It contains, like diastase, nitrogen.

Cl. Bernard(*b*) has undertaken a new series of researches with reference to the statements made by former experimentalists, that an active ferment, similar to diastase, was only secreted by the submaxillary and sublingual glands, but that the secretion of the parotis did not possess that property; and has arrived at the following conclusions:

1. The mixed saliva, not only of the dog but of men and of horses, is capable of converting starch into dextrine and glucose, but does not possess this property at the moment of its escape from the glands. The secretion of the parotis is watery, that of the submaxillary adhesive and glutinous.

2. If a piece of the mucous membrane of the mouth be washed with water, and the liquid filtered, it will possess the fermenting property as well as the mucous membrane itself, when it has been

(*a*) *Compt. rend.*, April, 1846; and *Chem. Gaz.*, No. 86, p. 196.
(*b*) *Archiv. Génér.*, Paris, Jan. 1847

exposed for some time to the air. The mucous membranes of the intestines, and of the bladder also, possess the same property.

From these experiments it is evident that there does not exist any peculiar ferment in saliva, but that the mucous membrane of the mouth which is covered and impregnated with substances in which, from exposure to the air, a peculiar state of metamorphosis is induced, supplies to the saliva particles of these bodies, and thus communicates to it its property of producing fermentation.

Digestion.—Bouchardat and Sandras(*a*) have communicated to the French Academy the following results of their researches on the digestion of spirits:

Spirituous liquors are only diluted, but not in anywise changed, in the stomach and intestinal canal, by the saliva, gastric juice, mucus, &c. It is absorbed through the veins, as Majendie already remarked. This principally takes place in the stomach, but when large quantities of it are consumed, or when it is mixed with sugar, it may also be absorbed in the intestinal canal.

The vessels which carry off the chyle absorb none of it. If fatty substances have been consumed at the same time, they may be found in considerable quantities in the chyle, but no alcohol.

When the spirits have passed into the circulation only a very small portion evaporates from the lungs, otherwise it is not separated by any organ of secretion. If too much alcohol passes into the blood, the arterial portion of it assumes the colour of the venous, and all the appearances of asphyxia may ensue. The alcohol can be converted directly into carbonic acid and water by the inspired oxygen, but in many experiments they found as an intermediate product acetic acid. Alcohol and its products disappear rapidly from the system. When taken with sugar or dextrine it disappears more rapidly than both.

Boussingault(*b*), in a beautiful series of experiments which he made on the assimilation of food, and which our space forbids us from further noticing, has singularly enough come to the same conclusion as Liebig did some years ago, and in this respect Dumas has been gradually following his example.

Carl Schmidt(*c*) has started a new view of the nature of the gastric juice. He denies the existence of a free acid in it as it is secreted by the glands, but assumes that a copulated compound of an organic substance (pepsine) with hydrochloric acid, analogous to sulpho-lignic acid, is afterwards formed He calls this active principle hydrochloropepsic acid. It is precipitated by salts of lead and mercury, and may be separated from them completely by sulphuretted hydrogen. Its acid solution possesses the power of dissolving animal substances in the highest degree. This complex acid is decomposed by

(*a*) *Sur la Digestion, &c., Compt. Rend.* t. xxiii. No. 2.

(*b*) *Experiences sur la Digestion ; Annal. de Chim. et de Phys.*

(*c*) *Ueber das Wesen des Verdauungs Processes ; Annal. der Chem.*, Bd. lxi. p. 311.

concentrated acids and alkalies, and the latter separates the pepsine from the hydrochloric acid in such a way that the addition of more acid does not reproduce the original compound.

Fat.—Redtenbacher(*a*) has shown, in a very excellent memoir, that by the action of nitric acid on oleic acid, that is by oxidation, not only are the volatile acids of butter, the caprylic, capronic, caprinic, and butyric acids, produced, but also acetic, metacetonic, valerianic, œnanthylic, and pelargonic (a volatile acid found by Pless in the Pelargonium roseum) acids. All these acids consist of a carbohydrogen, combined with O_4. From these experiments the occurrence of the above-mentioned acids in almost all natural fats, and particularly in human fat, is accounted for. Lerch has, for instance, found caprylic acid in considerable quantity in human fat. According to Redtenbacher, this acid has, in dilute solutions of it, precisely the same smell as that observed from healthy human perspiration; and he therefore thinks that after great exercise, or when the body is very much heated, this acid is volatilized.

The Bile and its Products.—Redtenbacher(*b*) has made the interesting discovery that cholestearine and choloidic acid, when treated with nitric acid, yield the same products of decomposition, which he calls cholesteric acid. It thus appears that cholestearine is allied to the non-nitrogenous constituents of the bile in constitution, and not to the fats. Acetic, caprinic, caprylic, and oxalic acids, &c., were also obtained as secondary products of this reaction on both substances.

Schlieper(*c*) examined cholic acid in the same manner as Redtenbacher has done the choloidic, and also obtained the cholesteric acid, but did not detect any of the other volatile products which Redtenbacher found, nor oxalic acid.

Schwendler and Meissner(*d*) have added to our knowledge of the composition of cholestearine. They likewise examined the products of distillation, but do not appear to have obtained any important results. They conceive that the hitherto received formula must be quadrupled, which will make it $C_{84}H_{72}O_3$ and the crystallized $C_{84}H_{72}O_3+2HO$.

Redtenbacher(*e*) has made the important discovery that taurine, one of the most remarkable products of decomposition of bile, contains 25·70 per cent of sulphur, which had hitherto been entirely overlooked, and that consequently the bile itself must be rich in that substance. He assigns to taurine the formula $C_4H_7NO_6S_2$.

(*a*) *Uber eine algemeine Enstehungsweise der Säuren* (CH)O_4 *Mit dem Siedpunct unter* 300° C.; *Annal. der Chem.*, Bd. lix. p. 41.

(*b*) *Ueber die Einwirkung der Saltpetersäure auf Choloidinsäure und Cholestearin; Annal. der Chem.*, Bd. lvii. p. 145.

(*c*) *Ueber die Einwirkung der Saltpetersäure auf Cholsäure ; Annal. der Chem.*, Bd. lviii. p. 37.

(*d*) *Beiträge zur Kentniss des Cholestearins ; Annal. der Chem.*, Bd. lix. p. 107.

(*e*) *Ueber die Zusammensezung des Taurins ; Annal. der Chem.*, Bd. lvii. p. 170.

Verdeil(a) has succeeded in obtaining the bilate of soda, or principal constituent of the bile crystallized, and has thus confirmed Plattner's original observation. He gives as the formula of pure bilate of soda, $C_{44}H_{40}NSO_9+NaO$.

Von Gorup Besanez(b) has published a most excellent memoir on the bile, but of which we can only give a very short notice here. He shows that bile, by its spontaneous decomposition, yields the same products as when treated with dilute acids, namely, choloidic acid, taurine, and ammonia, the first being in greatest quantity. In one case he obtained cholic acid, a product which is obtained by the action of potash on bile. He also considers human bile to differ very little, if at all, from ox bile, contrary to the opinion of Kemp(c), who found on analysis that human bile contained four per cent. more carbon than ox bile, and also *more nitrogen*.

With respect to the colouring matter of the bile, Von Gorup considers that the bilifulvine, biliverdine, &c., of Berzelius, are only modifications of the same substance, and this again only a peculiarly altered blood-colouring matter, an opinion already expressed by Scherer, and after him by Polli. Von Gorup thinks the iron in the bile favours this view. He not only confirmed Bertozzi's original observation, that copper occurs in gall-stones, but he also shows its existence in the bile itself, though probably not as a constant constituent. He likewise confirms an opinion, by no means new, that the bile, at least the bilate of soda, has an antiseptic action on nitrogenous food and does not excite fermentation. He, like Pettenkofer, could not detect bilate of soda in the faeces although he found mucus and the colouring matter, and therefore concludes that it is reabsorbed.

He also touches on the connexion between the bile and the production of fat, the similarity of the choloidic and cholic acids, in their proportion of hydrogen and carbon, to fat, and on an observation of his on the presence of choloidic acid in the bile of pigs, which of all animals have the greatest tendency to produce fat.

Gundelach and Strecker(d) in their very complete memoir on the bile of the pig, which is distinguished from other biles by its being precipitated by acetic acid, deny that choloidic acid exists in it, as stated by Gorup-Besanez. The acid which he supposed to be choloidic acid they consider to be a peculiar acid, free from sulphur, to which they have given the name of hyocholeic acid, and that this acid replaces the bilic acid. Its formula, in combination with soda, is $C_{54}H_{43}NO_{10}+NaO$.

This acid differs from the acid of ox-bile in not being soluble in

(a) *Uber die krystallisirte Galle ; Annal. der Chem.*, Bd. lix. p. 311.
(b) *Untersuchungen über Galle ; Erlangen ;* also *Annal. der Chem.*, Bd. lix. p. 120.
(c) **Trans. of the Cambr. Phil. Soc.**, vol. viii. p. 1.
(d) *Untersuchung der Schweine Galle ; Annal. der Chem.*, Bd. lxii. p. 205.

water, yields insoluble precipitates with lime, baryta, &c. As it does not contain any sulphur, it cannot yield taurine.

When the bile of the pig comes into contact with the chyme, which is always acid, hyocholeic acid must necessarily be precipitated and the acid of the chyme neutralized. This fact would render an examination of the process of digestion in the pig highly interesting.

Mulder(*a*), in a memoir which he has published on the constitution of the bile, endeavours to support the views of Berzelius on the nature of that fluid, and, of course, totally denies the existence of Liebig's bilic acid. He has, however, brought forward nothing particularly new.

The Bile in Disease.—Von Gorup Besanez has published in the memoir already quoted a great number of analyses of bile from patients labouring under a great variety of diseases, from which he draws the following conclusions:

1. The quantity of the bile varies very much, and, except in the case of typhus, where it is *generally small*, there appears to be no relation between it and the disease.

2. The colour is also very variable; the more concentrated the darker; generally very *clear* and of a light yellow in typhus, and in inflammation, especially of the organs of respiration; on the other hand it is dark, often black, in chronic abdominal diseases.

3. It has very little consistency in typhus and in inflammation; it is thick and tough, on the other hand, in chronic diseases.

4. The reaction is mostly neutral, seldom slightly alkaline, but it is sometimes acid. The latter results either from the decomposition of the bile or from pus, and the consequent formation of lactic acid. In typhus the bile is remarkable, like all secretions, for the rapidity with which it decomposes.

5. The water of the bile is increased, and consequently the solid constituents diminished, in inflammations, especially in pneumonia and typhus. From this, as well as from the general deficiency of colouring matter, it would appear that the constituents of the bile are retained in the blood, which has been actually proved in the case of pneumonia. Further, it deserves to be remarked that in typhus and pneumonia the quantity of the bilate of soda in proportion to the other constituents is diminished. In 100 parts of bile extract, for instance, from a case of pneumonia, there was 44·05 of bilate of soda, and in a case of typhus only 9·6, the normal proportion being from 60 to 70. The supposition, therefore, that there is a bilous pneumonia, would appear to be well founded.

6. The quantity of solid matter is increased in abdominal affections of the heart, &c. They also appear, contrary to the statements of Frerichs, to be increased in tuberculosis. The latter found them so, and they were only increased when some affection of the liver was present at the same time.

(*a*) *Untersuchungen über Galle. &c.*

7. The quantity of mucus is in general in the inverse ratio to that of the other solid constituents, and generally varies between one to six per cent. In typhus it appears relatively increased from the deficiency of the other solid constituents. In fact, in this disease, the gall-bladder often contains nothing but mucus.

8. The fat appears to be generally increased in colliquative diseases, typhus, and tuberculosis, even where the microscope shows the presence of fat globules and crystals of margaric acid. Crystals of cholestearine are in general rare, and mostly occur where the bile is very concentrated in abdominal complaints.

THE URINE AND ITS CONSTITUENTS.—*Combination of Urea with Salts.*—Werther(*a*) has examined this subject very carefully, and has obtained some very beautiful results. The combinations of urea with salts are merely held together by a very weak affinity, and appear to exist only with salts whose solubility in water or alcohol does not differ much from that of the urea. Most of the salts formed are not decomposed by boiling, and some not even by nitric and oxalic acid.

Urea forms with nitrate of silver two compounds, represented by the formulæ $Ao_5O_5NO_5 + C_2H_4N_2O_2$ and $2(Ao_5 O, NO_5) + C_2H_4N_2O_2$. The first compound crystallizes in large, shining, rhombic prisms with oblique surfaces, which are soluble in cold and hot water and alcohol. When the aqueous solution is boiled for a long time, it is partially decomposed, and cyanate of silver formed; nitrate of ammonia also appears to have been produced. The second salt forms large, shining, rhombic prisms, with plain terminal surfaces. A number of other compounds with nitrates were obtained, many of which exploded when heated.

It unites with chloride of sodium, forming a salt which crystallizes in very shining rhombic prisms, with oblique terminal surfaces, which deliquesce in the air. They are very readily soluble in water, are decomposed in boiling or cold absolute alcohol, a small quantity of NaCl being dissolved with the whole of the urea. But if a tolerably concentrated aqueous solution of the crystals is mixed with ten to twelve volumes of alcohol, nothing separates, even after a considerable length of time; indeed, a certain excess of nitric acid then no longer produces any precipitation. This circumstance is very important in the determination of urea in urine, as this constantly contains chloride of sodium. The formula of this compound is $NaCl + C_2H_4N_2O_2 + 3HO$.

He did not succeed in getting crystalline compounds with the chlorides of potassium, ammonium, or barium.

From the composition of the above compounds, urea may be regarded both as CH_2 and as $C_2H_4N_2O_2$; however, the two compounds with nitrate of silver speak very much in favour of the composition $C_2H_4N_2O_2$; as otherwise, if the second silver salt were considered

(*a*) *Erdmann und Marchand's Jour.*, Bd. xxxv. p. 51 ; and Chem. Gaz., No. 79, p. 58.

as $AgONO_5 + CH_2NO$, the first would become $2(AgO_1NO_5) + 2$ (CH_2NO), and the lime and magnesia compounds would have a still more complicated composition.

On the Action of Chlorine on Urea.—De Vry(a) observed that, by heating in an oil bath muriate of urea, obtained by passing dry muriatic acid over powdered urea to a temperature of 293° cyanuric acid was obtained, chloride of ammonium being at the same time formed. When, instead of removing the bath at 293° the temperature is raised to about 608° and the mass treated with water, the white body discovered by Liebig and Wöhler was obtained instead of cyanuric acid.   Wurz(b) obtained cyanuric acid by treating the fused urea with dry chlorine instead of with hydrochloric acid.   In addition to the products above mentioned, hydrochloric acid and nitrogen were also given off.

On a new Product of Decomposition of Urea.—Wiedemann(c) found on heating nitrate of urea, as also pure urea, a new body, for which he proposes the name of *biuret*.   It is easily soluble in water and alcohol, crystallizes from the former with two equivalents of water, which it parts with at 212°, and from alcohol anhydrous. Its composition is represented by the formula $C_4H_5N_3O_4$.   Biuret dissolves unaltered in sulphuric acid, and is destroyed only by long continued boiling in it; it is not precipitated from its solutions by bases, acids, or metallic salts; and is, as far as the author is able to judge from his experiments, a neutral substance.   It is especially characterized from its solution acquiring an intensely red colour on the addition of caustic potash and solution of sulphate of copper.   It fuses when heated, and is converted with loss of ammonia into cyanuric acid.   He considers that when urea is heated it is first converted into biuret, and then into uric acid.

On some new Products of Decomposition of Uric Acid.—Schlieper(d) has examined some new products obtained from alloxanic acid, and also the salts of that acid, and has added very much to our knowledge of that class of bodies which the classic labours of Liebig and Wöhler first made known.

If an aqueous solution of alloxanic acid be boiled, or retained at a nearly boiling temperature, it is completely decomposed, carbonic acid being copiously evolved.   If this solution be evaporated rapidly to the consistence of honey, and then treated with water, a portion only is dissolved, whilst a dazzling white crystalline powder remains behind.   The dissolved portion, after having been again evaporated and treated with water, leaves another portion of the white powder undissolved.   The alloxanic acid is thus decomposed into carbonic acid and two new substances; the one which is insoluble in water is a new acid, called leucoturic acid; the soluble substance is a neutral body, called difluane.

(a) *Annal. der Chem.*, Feb. 1847; and Chem. Gaz. No. 109, p. 182
(b) *Compt. rend.*, March 15, 1847.   (c) Chem. Gaz. No. 124, p. 482.
(d) *Annal. der Chem.*, October, 1845; and Chem. Gaz. No. 77, p. 1.

Leucoturic acid constitutes the smallest part of the products of the decomposition of alloxanic acid by heat. It forms a snow-white granular crystalline powder; it is insoluble in cold water; tolerably soluble in boiling water, requiring, however, some time. It is not acted upon by acids; it is readily soluble in alkalies, and precipitated by acids, provided the solution is recently prepared, and no heat has been applied. If it be kept for some time ammonia is evolved, and oxalic acid remains. Its formula is $C_6H_3N_2O_6=C_6H_2N_2O_5+HO$.

Difluane forms the largest portion of the products of decomposition of the alloxanic acid. When perfectly dried it forms a transparent, brittle, gummy, vesiculous mass, which is easily pulverized. It is very soluble in water; the solution does not crystallize, nor is it decomposed by boiling; it is slightly acid, of a bitter and saline taste, and yields white precipitates with salts of lead and silver. It does not combine with ammonia. It is decomposed by solution of potash, even when cold, ammonia being evolved, and oxalic acid being formed in the solution. When heated with nitric acid it is decomposed with effervescence, alloxan being formed, but no alloxanic or parabanic acid. Sulphuric acid appears to exert a remarkable decomposing influence, both on difluane and lencoturic acid. The formula is $C_6H_4N_2O_5$. The formation of these bodies from alloxanic acid may be accounted for thus:

1 atom of leucoturic acid,	.	.	.	6C	3H	2N	6O
1 atom of difluane,	.	.	.	.	6	4	2	5
4 atoms of carbonic acid,	.	.	.	4	0	0	8
1 atom of water,	.	.	.	.	.	0	1	0	1
2 atoms of alloxanic acid,	.	.	.	16C	8H	4N	20O

This decomposition of alloxanic acid into leucoturic and carbonic acids, and difluane, is exactly similar to that of its isomeric compound alloxan, by boiling its aqueous solution, into alloxantine and parabanic and carbonic acids.

If a solution of alloxantine be rapidly boiled down to a small volume with excess of hydrochloric acid, it undergoes a partial decomposition. Another white pulverulent body separates, mixed with alloxantine, from which it can be freed by treatment with nitric acid, in which it is insoluble. This substance is a new acid, to which the name of allituric acid has been given. It is soluble in about from fifteen to twenty parts of boiling water, forming a yellowish fluid, from which the acid separates as a voluminous crystalline powder, of a somewhat yellowish colour on cooling. It is soluble in concentrated sulphuric acid, and is precipitated, unchanged, on dilution with water. When heated with nitric acid it undergoes no change. It dissolves in potash, but is completely decomposed by it, ammonia being evolved. Its formula is $C_6N_2H_2O_3 + HO$.

From the solution of alloxantine filtered from the allituric acid, the ammonia salt of another acid was obtained in splendid, shining, yellow laminæ. The acid itself could not be separated, being retained in its compounds with remarkable force. The ammonia salt

is almost insoluble in cold water; more soluble in hot. It is perfectly insoluble in ammonia, and its crystals do not lose any of their lustre in it. It is perfectly insoluble in and undecomposable by nitric acid. Strong sulphuric acid dissolves it, and on dilution the acid is precipitated. It is soluble in dilute solution of potash, ammonia being evolved. When the dry salt is heated it burns readily, and glimmers like tinder. Its formula, considered as a bibasic acid, in combination with ammonia, is $C_5N_3HO_5,NH_4O + HO$. Schlieper regards it as a conjugate acid, in which three atoms of cyanic acid are combined with two of carbonic acid and water.

Extractive Matter.—Scherer(a) has published a very valuable contribution to our knowledge of one of the most difficult points, connected not only with the urine but with all the animal secretions, which, like all his other memoirs, is remarkable for its clearness, and for the importance of the results at which he has arrived. These results he sums up as follows:

1. The greatest part of what has been heretofore considered as extractive matter of the urine, is a peculiar colouring matter, which, by treatment with salts of lead, and with acids, may be decomposed into a number of parts having different constitutions.

2. This colouring matter is, in the normal condition of the system, poorer in carbon and hydrogen than that of the bile.

3. It is probable that both are derived from the hæmatine of the blood, an opinion also held by Polli.

4. As the colouring matter of the urine has not always the same composition, and from its behaviour under the influence of the air, it may be deduced that it, as well as the substance from which it is produced in the blood, is in a state of constant chemical metamorphosis, which may be considered as oxidation or eremacausis.

5. This oxidation takes place as well with the hydrogen as with the carbon, for the former also varies; and it thus affords a proof of the production of water in the process of combustion going on in the animal body.

6. This urinary colouring matter occurs in the urine in different conditions; one part is richer in hydrogen and carbon, and others poorer.

7. The richer the food is in carbon and hydrogen, the habits being the same, the richer appears to be the secreted colouring matter.

8. The more organic material is wasted within a given time by the processes of the system (as in fever), without the act of respiration, and the activity of the liver being at the same time proportionably raised, the less *intense* appears to be the process of decarbonization of the constituents of the blood, although it may be increased quantitatively.

9. Conditions similar to those which occur in the production of

(a) *Uber die Extractivestoffe des Harns; Annal. der Chem.*, Bd. lvii. p. 180.

urea and uric acid appear to exist in the production of these colouring matters. We find, for instance, with an increased metamorphosis, that is, an increased consumption of organic materials, that the uric acid, which is rich in carbon, is increased wherever there is not at the same time an increase of action in the functions of respiration, and in the activity of the liver; that is, when the *intensity* of the action does not keep pace with the *quantity*. This analogy is also evident from the fact that a urine rich in uric acid has in general a colouring matter rich in carbon and hydrogen.

10. Although, as a general rule, the carbon and hydrogen appear to diminish and increase in pretty nearly the same proportion, yet cases occur where the hydrogen is much more diminished than the carbon.

11. From an immense number of observations made on patients labouring under disease, it may be deduced that the richer the urine is in these colouring matters, the greater is the waste of blood globules in the vital functions. As a general rule, in long-continued anæmia and hydræmia such is the result.

Free Sulphur and Phosphorus in Urine.—Ronalds(*a*) supposes from the circumstance that urine when it putrefies gives off sulphuretted hydrogen, that there exist other compounds of sulphur in that fluid than sulphates. In some experiments which he made on this point he found the quantity of unoxidized sulphur passed in twenty-four hours to amount to from three to five grains. He also considers that phosphorus exists in the same condition and to the same amount. This statement has been doubted by Scherer, but Aldridge, in his excellent lectures on the urine had come to the same conclusion several years ago. Ronalds states that the quantity of unoxidized sulphur contained in diabetic urine often amounts to four times that contained in healthy.

Creatine in Urine.—Heintz(*b*) has proved that the body which he discovered in the urine almost simultaneously with Pettenkofer's discovery of the peculiar compound formed in urine with chloride of zinc, is identical with that of Pettenkofer, and is in fact creatine, a fact fully established by Liebig's beautiful researches.

Urea in the Liquor Amnii.—Wöhler(*c*) has detected the presence of urea in the liquor amnii of a woman.

PATHOLOGICAL CHEMISTRY OF THE URINE.—*Leucine and Creatine in Urine.*—About a year since, I read a short paper before the Dublin Pathological Society, containing the results of an analysis of the urine of a patient in the Meath Hospital. He had been for a long period in India, and his constitution was completely broken up. He appeared to be principally affected in the liver and kidneys. His urine contained a large quantity of albu-

(*a*) Phil. Trans., 1846.
(*b*) *Ueber das Kreatine im Harn; Poggendorff's Annal.*, Bd. lxx. No. 13, p. 466.
(*c*) *Harnstoff im Fruchtwasser; Annal. der Chem.*, Bd. lviii.

men, and deposited a beautiful pink sediment, which had all the properties of murexide, or purpurate of ammonia. The liquid. filtered from the coagulated albumen, contained distinct traces of benzoic acid, abundance of lactic acid, leucine, scarcely a trace of urea, but, on the contrary, a very large quantity of creatine. I was able to obtain beautiful pure specimens of the two latter, and sufficient of the lactate of zinc to make several analyses. The presence of leucine is certainly very remarkable, and indicates that a process analogous to a perfect putrefaction was going on in the patient's system; this would also seem to be indicated by the presence of the lactic acid, which is also a product of the putrefaction of animal substances. I was unable to detect any sugar. Just as the case became interesting he died, and consequently I was unable to study the matter further. I believe, however, that leucine and sugar of gelatine are frequent constituents of urine, although not hitherto noticed. We know so little about creatine, that I can say nothing about its relation in the present case.

Oxalate of Lime in Urine.—Pickford(*a*) notices the occurrence of oxalate of lime in the urine, the various opinions relative to its importance, and the cases in which it has been as yet noticed. He observed it in the urine of a peasant aged 23, suffering from cardialgia accompanied by anæmia, in typhus, empyema, pleuro-pneumonia, pemphigus, typhlitis chronica. In all the cases anæmia was present.

Dr. Aldridge's experiments on this point do not appear to be as well known as they deserve. He has shown that uric acid by the addition of the element of water contains the elements of oxalic, carbonic, hydrocyanic, and formic acids, and ammonia; and that, under certain circumstances, it may be actually converted into those bodies. Thus he states if urine which exhibits no reaction for oxalic acid on being passed be kept for some time and then simply boiled, oxalate of lime will be deposited, and the existence of hydrocyanic and formic acid may be readily determined. These experiments of Aldridge point out the necessity of examining the urine in a fresh state, and without boiling, otherwise the detection of oxalate of lime would be of no importance, as it may, should these experiments be confirmed, be derived from the simple decomposition of uric acid after the secretion of the urine.

Variations in the alkaline and earthy Phosphates in Disease.—Bence Jones(*b*) has made a number of experiments to determine the total amount of the phosphates contained in the urine voided by patients labouring under encephalitis on the one hand, and under delirium tremens on the other. The average specific gravity of the urine in encephalitis was 1025·3, and the average quantity of phosphates in 1000 parts 8·26. The average specific gravity of the urine in delirium tremens was 1020·4, and the quantity of phosphates only 0·67 in

(*a*) *Notizen zur Untersuchung des Urins; Zeitschrift für Rationelle Medecin von Henle und Pfeufer,* Bd. v. p. 45.

(*b*) Chemical Gazette, No. 87, p. 226.

1000 parts. The general results at which he has arrived are: 1. That acute affections of the nervous substance, organic and functional, are the only diseases in which an excess of phosphatic salts appears in the urine ; and in acute inflammation of the brain its amount is proportional to the intensity of the inflammation. 2. That in a large class of functional diseases of the brain, of which delirium tremens presents the most marked example, the secretion of phosphates is most remarkably diminished. 3. That no chronic disease exhibits any marked excess in the total quantity of phosphatic salts secreted.

Urine in Insanity.—Erlenmayer(*a*) divides the urine of insane persons into two classes :—1. Urine of those suffering from melancholia, mania, madness, or paraphrenie. 2. Dementia or anoia, and idiopathic epilepsy.

The urine of the first class is pale, poor in solid matter, particularly in uric acid and its compounds, and the urea in mania has a great tendency to decomposition, and consequently to alkalescence. This tendency to decomposition is much less in melancholia, and in proportion as it approaches mania or paraphrenie the tendency increases. Such urine, on this account, readily deposits phosphatic sediments. Erlenmayer never, however, observed an absolute increase of the phosphates even in mania. He generally observed the urine to have a tendency to alkalescence in the state of depression which frequently precedes mania, and in the lucidis intervallis in periodic mania; and in fact it was often the only premonitory symptom. In insanity, but especially in mania, there were very frequent attacks of polyuria, which disappeared as the disease abated.

The urine in the second class was, on the other hand, strongly coloured, rich in solid matter, especially in uric acid and its compounds, and consequently of high specific gravity, and having very little tendency to alkalinity. The sediment occasionally observed in it contained uric acid and its compounds, which does not agree with the statements of Sutherland and Rigby.

The urine in periodic mania is perfectly similar to that in epilepsy, in which in general he observed after each attack crystals of uric acid.

The more solid constituents the urine contains, without at the same time an improvement in the condition of the mind taking place, the darker will be its colour, and the more abundant the deposit of uric acid and urates, and the more unfavourable the prognosis.

Erlenmayer gives as the maximum specific gravity of the urine in the morning 1032, while Sutherland and Rigby give 1040.

Of foreign substances fat was the only one frequently present, while albumen, sugar, pus, and the constituents of the bile, were very seldom observed.

Urocyanine.—Aloys. Martin(*b*) has observed, that on the addition

(*a Uber den Harn der Irren ; Archiv. für Phys. Heilkunde,* 1846, p. 684.
(*b*) *Uber das Urokyanin und einige andere Farbestoffe im Menschen Harn. Pathol. Chem. Inaugural abhandlung.* München, 1846.

of muriatic acid to many urines an amorphous, more or less blue-coloured powder separates with the crystalline uric acid. This substance appears to be a mixture of various colouring matters, passing from amaranthus-red through dark Burgundy-red to indigo-blue, which, by the use of ether, and of cold and boiling alcohol, can be partially separated from one another and from uric acid. He found that the blue colouring matter, to which he gives the name of urocyanine, was always the principal constituent. It is very soluble in alcohol, contains nitrogen, and volatilizes like iodine, giving a similar coloured vapour. The pathological conditions in which Martin found the urocyanine were sometimes accompanied by an increased quantity of urea, and sometimes by a diminution of it. He also found that the more the lungs were disturbed in their deoxidizing function, and the liver in its decarbonizing function, the pigments became darker. Thus it was found in pneumonia, especially during the first days, in a dark-coloured, saturated urine; in acute rheumatism, as well of the joints as of the tendons and muscles; typhus in all the three stages; scarlatina during the scaling off of the epidermis; chlorosis, when gastric symptoms were present; anæmia, dropsy, tuberculosis, acute scirrhus, dyspepsia, &c.

MEDICAL MISCELLANY.

Postscript to Dr. Graves's *Paper on the Diffusion of Cholera, in the present Number. See pages* 1 *to* 39.

It gives me much pleasure to find that, since the preceding observations were written, suitable measures are at length being taken for the treatment of cholera patients in this city, under the direction of the Board of Health, and with the co-operation of the Boards of Guardians. Several hospitals will, I am told, be ready for the reception and treatment of poor patients attacked by the disease, and ample accommodation will be provided for those who have the misfortune to labour under the epidemic. The announcement of the fact that, when cholera arrives in the city (which I fear it will do at no very distant date), it will not find us altogether unprepared, will be hailed with pleasure by every humane person who has the interests of his fellow-citizens at heart. I feel bound to acknowledge that the public owe a deep debt of gratitude to the Sanitary Committee, and to its respected chairman, Sir Edward Borough, in particular, for availing themselves of every means which the law enabled them to employ in effecting this desirable result. I have no doubt likewise that the Board of Health have conscientiously discharged the practical duties imposed on them by the Legislature; I quite willingly accord to them all the praise they are entitled to on

that score. But I cannot retract a single word of what I have already said concerning the absurd position in which the Boards of Health, both in Dublin and in London, have placed themselves by their first "Circular Manifesto;" and in which they ventured to assert in an authoritative manner, that "all experience" proved that cholera was not contagious, and that there was no danger to persons coming in contact with individuals labouring under the disease; and, consequently, no objection to admitting cholera patients into general hospitals. The experience gained in the former epidemic I have already dwelt on; and I now wish to add the details of some facts observed during the present epidemic, which appear to be decisive of the question, and consequently fatal to all claims the Board of Health here can have to be guides, either of the public or the profession, on this vitally important question.

The first testimony to which I wish to direct the attention of my readers is taken from the statistics of the cholera hospital in Surgeon-square, Edinburgh, by William Robertson, M. D., a gentleman well known as an accurate observer and talented physician. The paper to which I advert is published in the January Number of the Monthly Journal, and Retrospect of the Medical Sciences. Dr. Robertson, at pp. 457–8, records the following facts:

"With every deference for the opinion held by many members of the profession, and promulgated by the London Board of Health, I feel constrained to admit the evidence in favour of the contagious properties of cholera, or, at least, without insisting upon the literal application of the term contagion, to believe that there is something in the presence of the sick likely to induce the same disease in the sound. If we grant the existence of a morbific poison emanating from the bodies of the sick, it seems natural to infer that it must be energetic in proportion to its degree of concentration, and that the clearest manifestation of its virulence may be looked for in hospitals. Since the 28th October eighteen nurses have been employed at different times in the cholera hospital; five of these have had severe attacks of cholera, and three have died. A sixth, who for twelve hours had frequent vomiting and purging, was treated as a cholera patient, and recovered. Yet, at the same time, a very large number of nurses were employed in the neighbouring buildings of the Royal Infirmary, and escaped the disease. The circumstances, habits, and diet of both sets of nurses are the same; the work is not more severe in the cholera hospital than in the Infirmary; the arrangements for ventilation and cleanliness are not defective in Surgeon-square; but for nearly two months past no cholera patients have been admitted into the Royal Infirmary. In illustrating the contagious properties of typhus fever, we are accustomed to regard evidence of this sort as tolerably conclusive.

" Other two cases have occurred to me, which seem interesting in connexion with this subject. About the 20th November, a young woman was suddenly seized with illness on the street; she com-

plained of pain in the abdomen, and was immediatly sent by some of the passers-by into the cholera hospital. On admission, there was no evidence of cholera, but the patient was in labour, and in an hour or two gave birth to a fœtus in the third month. After four days' residence in the hospital, the patient was, at her own request, dismissed. She was, a few days afterwards, re-admitted, with the unequivocal symptoms of the disease, and stated that the premonitory diarrhœa had manifested itself two days after her dismissal, while she was an inmate of the House of Refuge. The patient died after a few days' illness.

" The second case relates to the importation of the disease from an infected locality into one which had for some weeks been healthy. A woman who had premonitory symptoms of the disease while residing in an infected lodging in the Horse-wynd, removed to Currie's-close, in the Grass-market, and, after passing thirty-six hours in this new locality, was brought into the cholera hospital. It had been remarked as rather singular, that for several weeks before no case had been reported from Currie's-close, notoriously one of the filthiest closes in the old town of Edinburgh; and it was not unnatural to expect that, after this importation of the disease into a locality where the predisposing causes existed in such perfection, other cases would speedily show themselves. Within the next few days several did originate in Currie's-close; and had not a number of its miserable inhabitants been speedily removed to the quarantine establishment in Forrest-road, there is little doubt that many of them would have suffered."

The Board of Health will, if I am not mistaken, find in the above facts some materials for reflection, if not regret; for they cannot but feel that, as far as their authority is concerned, they have been instrumental in propagating the belief, that nurses may be employed in attending on cholera patients, without thereby incurring any danger of contracting the disease; an assertion which I have shown is totally at variance with the truth. During the visitation of such an epidemic, nurses must be employed, but let the risk which they thereby run be, as far as it is possible to do it, compensated by the increase of their pay. To this point I wish to draw the attention of the public, and of the Boards of Guardians generally throughout the country; and I think it right also to observe, that, with respect to the physicians who are destined to treat cholera patients, the remuneration to be allowed is not to be measured solely by the labour they must undergo, or the skill which they must exercise. It should be considered in reference also to the danger which they thereby necessarily incur. It is to be hoped that the authorities will exhibit more consideration for the profession than they did during the unfortunate fever epidemic of 1847. But to return to the position of the Board of Health, " that all experience proves that cholera is not contagious;"—let us see how it is borne out by the introduction of the disease into Belfast. On this subject I have received a letter,

dated the 6th January, from Dr. Henry M'Cormac, whose writings on fever and other subjects have earned for him a well-founded reputation:

" You are aware that cholera occurred here for the first time in the person of an individual (with his family) who arrived direct from Edinburgh. He died in the workhouse hospital. The subsequent cases, between twenty and thirty in all, be it more or less, were confined to the workhouse, partly among adults, partly children. The first two cases that ensued in town were, first, an individual who had been discharged from the workhouse. He shortly after, I know not in how many hours, exhibited symptoms of cholera, and died. Ten hours unfortunately elapsed without his receiving medical assistance. The second case was that of a girl who, with others, had been in to see this man. The gentleman who visited her told me that the floor was covered with choleric dejections. She died. The next town case came, I believe, direct from Glasgow, as was assured me by more than one individual who came in the same vessel, and as, indeed, was a matter of notoriety. This case was taken to the General Hospital. It ended fatally. Up to yesterday seventy-three cases, partly workhouse, partly town cases, have been reported in all. Of these, twenty-nine cases proved fatal, sixteen remaining over. The course of the disease here leads, in my mind, to no other conclusion, than its communication and communicability from person to person. Such was also the result of my experience when cholera prevailed in Belfast before."

Nothing surely can be clearer than this evidence, and no one, after reading the details of the preceding facts, can attempt to deny that the cholera was introduced into Belfast by importation from Edinburgh and Glasgow, and that its capability of being imported shows that it is contagious. And in a subsequent communication Dr. M'Cormac informs me, upon the authority of the apothecary to the hospital, that " of those attacked with cholera in Belfast about seventy were inmates of the work-house, and about two-thirds of these were children. It is worth observing, that, since the removal of the children from the nursery to other apartments in the house, there are much fewer of them the subjects of the disease. The porter, one of the nurses, and an assistant nurse, all of whom were much in the way of the disease, have been attacked. The two former are now convalescent and walking about: the last, I regret to say, died." Again, in the *Globe* of Saturday, January 6, I find it stated in a communication from Hertford : " The tramp at Crane's lodging here is recovering ; but Mrs. Tyler, the workhouse nurse, who attended him, has since died from the disease, as has also a child living in the opposite house."

Since the first portion of this paper was written I have received a detail of some interesting facts that occurred in the former epidemic, from Dr. T. H. Baker of Parsonstown, which so evidently demonstrate the contagiousness of cholera, that I fear that even the Autocrats who compose the Dublin Board of Health will be unable,

by the greatest exertion of their ingenuity, to induce the public any longer to acquiesce in the *dictum* contained in their celebrated Ukase.

" The first case of cholera," writes Dr. Baker, " which appeared in the Lorrha district, where I had a dispensary, in 1832, was that of a woman who drove her own ass and car. Midway between Birr and Portumna (fourteen miles), she was taken so ill that she was obliged to ask a bed from a very poor family, for the night. However, she died of cholera in a few hours. The next day the four persons residing in the house were attacked, and *died, all within twelve hours after the disease showing itself amongst them.* From this period the disease spread rapidly in a very small district (within a circumference of one and a half miles), so that in five weeks there were seventy cases and thirty-four deaths : no case appearing anywhere else between Birr and Portumna during the whole year. Perhaps I should add that many of the neighbouring people attended the wake of the first woman.

" In the year 1834, Mrs. Carty, of Ross (fifteen miles from Birr), went to a watering-place in the county of Galway (fifty miles from Ross), where there were some occasional cases of cholera. Finding herself not very well, she determined on coming home, and started forthwith, making the journey in one day. On that night she died of cholera ; next day her husband and one of her children were taken ill, and died on the following day. A married daughter, who resided twenty-five miles off (near Nenagh), hearing of her mother's illness, came for the purpose of seeing her, and found that she was dead, and her father and brother dying of cholera. She took alarm and started for home almost immediately. She, however, caught the disease and died. Her husband, who had not left home, took the disease two days after, and recovered : one of his children also took cholera, and died. There had not been a case of cholera between Galway and Ross (fifty miles), or between Nenagh and Galway (seventy-five miles), for the previous year. The disease was confined to the two houses. No person in the neighbourhood ventured near them. These cases are, in my mind, perfectly conclusive, not that I had the least doubt before of cholera being contagious."

The increase of cholera in Glasgow during the depth of winter proves that we cannot count upon cold as an agent capable of counteracting the spread of cholera ; and this statement is confirmed by the last news received from St. Petersburgh, and from which we learn that the cholera which had prevailed in that city during the summer months, and had slumbered during September and October, had awakened with a greater degree of energy in the commencement of November, just as the severe cold of winter had set in, and that its ravages at that period far exceeded those it had committed during the heat of summer.

I have to call the attention of my readers to another official circular, issued by the Board of Health in London, and dated Gwydyr

House, November 11, 1848. The General Board of Health, in this document, do not scruple to reiterate the opinion that it is important the public should know that the entire body of physicians and surgeons who have had the largest experience of this disease, not only in India but also in every city in Europe, entertain a decided opinion of its non-contagious nature, with a few individual exceptions. Having received many communications from physicians in various parts of the United Kingdom, since the publication of the last Number of this Journal, I must beg leave altogether to deny the truth of this assertion; and I have no doubt that, were the opinions of the whole profession deliberately taken, it would be found that the weight of authority was greatly in favour of the disease being contagious(*a*).

There is another point brought forward by the London Board of Health which requires a passing notice. They state that it has been observed that, concurrently with the outbreak of almost all great epidemics, there is some atmospheric condition, which, in proportion to the power and extent of the epidemic, depresses the general health of the public; and evidence of this, is more definite and full in regard to cholera, than in reference to any other epidemic. Such a statement made by the Board of Health is most astounding; for, as I have before shown, at the very moment they were making it, a reference to the reports of the Registrar-General would have been sufficient to convince them that the general health of the population was by no means depressed, but on the contrary was unusually good in all the very districts where cholera had made its appearance, in England or Scotland.

In the face of such an undeniable fact, even Dr. Adair Crawford's curious observations concerning the extraordinary changes which, according to him, prevailed in the state of the atmosphere in St. Petersburgh for several weeks before the recent outbreak of cholera, ought to have had less weight with the London Board of Health, particularly as that gentleman seems to have indulged in a sort of philosophical mysticism, which induced a frame of mind nearly allied to blind credulity. This is the only explanation I can give of Dr. Adair Crawford's recording that the crows in St. Petersburgh had forsaken some of their usual roosting-places in the public gardens of the city and suburbs, where they are generally found in great numbers, and had flown to the nearest high grounds. The learned doctor does not inform us whether this migration was preceded by any unusual mortality in the rookery. If no such mortality took place, then I have too much respect for the wisdom of crows to believe that this alleged flight had any connexion with the cholera or deleterious changes in the atmosphere; but we are, I suppose, to go back to the

(*a*) Doctor Byrne, of New York, has published a most interesting work, containing numerous proofs of the contagiousness of cholera, taken from observations made during the prevalence of this disease in America, some of which I hope to lay before the readers of this Journal on a future occasion.

Pagan superstition, and assign to Doctor Crawford the duties of an augur,—" observans quæ signa ferant, quò tendere pergant."

Case of Intestinal Calculus. By ALEXANDER HARRISS, L. R. C. S. I., Drumlish Dispensary, Co. Longford.

JULY 16, 1847, I was called upon to visit Margaret Breslin, a poor woman aged 54. On my arriving at her cabin I obtained the following history of her case :—About ten days previously she had been at a village some miles distant from her abode; on her reaching home she felt much fatigued, and also complained of a pain and soreness in the lower part of her left side, which she attributed to her having carried a heavy basket. Believing her illness to be occasioned by the above, she went to bed, hoping to be relieved in the morning. In this, she was disappointed, as she gradually became worse, until the fourth day, when she was forced to take to her bed, and keep on her back, with the thighs flexed on the abdomen, as that was the only posture by which she obtained relief. She said she was the mother of nine children, all living and healthy, and that she always enjoyed excellent health.

On examination I found her labouring under the following symptoms: great tenderness and pain in the abdomen, which was swollen and tympanitic; pulse 130, small and weak; tongue dry and white at the edges, of a dusky red in the centre; teeth covered with sordes; great thirst; eyes glassy, and pupils contracted; body covered with a cold clammy perspiration; lower extremities cold; fetid breath, which she perceived for the first time that morning, after vomiting some black stuff which she said had a very bad taste and disagreeable odour.

I then directed my attention to the spot where she complained of the pain and soreness existing to a greater degree than in any other part of the abdomen, and where she found her ailment to originate; this was in the left iliac region. I could not discover any difference between it and the other side, but she pointed to a circumscribed spot where she said all the soreness lay and began in, and that she conceited she felt a hard lump in the inside of the bowel, directly opposite to where she pointed; but from the swelling and tenderness which was present I could not feel any tumour. She had no motion from her bowels for the previous six days, although she said she had taken a large quantity of senna and salts. I prescribed a castor oil draught, directed a simple enema to be administered in three hours, and applied a blister to the seat of pain.

July 17th. Bowels still confined; pain increased, but she stated it had moved lower down; slept none; felt very weak and careless. I examined the rectum and vagina with the finger, but could not detect any tumour. Ordered her to repeat the medicine as before, and to have four grains of calomel every third hour.

July 18th. Bowels as before; pain somewhat lessened; and she

stated that she distinctly felt the lump continuing to move lower down in the passage. Calomel continued.

July 18th. No improvement, but she affirmed that the lump must be near the end of the gut, as she felt it give a roll. I examined the rectum with a glass speculum, but met with no obstruction. I then passed a large gum elastic catheter through the speculum, and, after it had traversed the rectum for about three inches beyond the speculum, it communicated the feel to my fingers as if it met with a bony substance, and I was not able to force it any further. I ordered her to omit the mercury and oil draughts, but to continue the use of the common injection. Before I left I administered a tobacco injection, the strength of half the usually prescribed form.

July 19th. No motion from the bowels; pain greatly abated. I examined the rectum with the finger, and about two and a half inches from the anus I met with the obstruction, and could also detect it for the first time through the vagina by the finger. Having brought with me a large polypus forceps, I was enabled, after some delay and difficulty, to abstract a calculus at least the size of a pigeon's egg, the long diameter of which was placed transversely across the rectum. It weighed three drachms. Ordered a common enema.

July 20th. Bowels well freed; pain, tenderness, and swelling of abdomen disappeared ; gums affected by the mercury. Ordered an ounce of decoction of bark every third hour, an alum gargle, and a pint of porter daily.

The woman came several times to the dispensary, in accordance with my directions, not for medicine, but to mark the state of her health, which she said was good. The last time I saw her was in the month of March last (1848), when she stated her health to be as good as it had been for the last twenty years.

Remarks.—This case exhibits some points worthy of observation, as well from the severity of the symptoms which were present, the different diseases which some of these symptoms strongly assimilated, and the obstinate constipation of the bowels, as also as from the peculiar and known remark of the patient herself relative to the motion of the imagined lump, and the rarity of the disease itself. The severity of the symptoms were of such a nature as at once to show the practitioner that the disease under which the patient suffered was of a serious nature, and required prompt measures for its removal; for on looking back to her state as described on my first visit, it will be seen she laboured under more or less of the symptoms which characterize enteritis, peritonitis, intussusceptio, hernia, and tumours pressing internally on the intestines. The constipation was such as to withstand the strong purgative measures which were adopted, and I consider would have continued so were it not that the removal of the calculus had been so soon effected. The remark of the woman herself, as regarding the motion of the tumour, is interesting and practical, for she could distinctly point out and tell me whenever it shifted, and even trace its course externally, as if it

commenced about the termination of the sigmoid flexure of the colon, and gradually moved downwards through the rectum. Lastly, the rarity of disease; I never met with a similar case since my connexion with the profession, nor could I learn from any of my professional friends with whom I have conversed about it, that they had met with such another.

In appearance the stone is white and soft externally; it feels as if it had been saturated with oil, and when broken presents brilliant striæ like mica, of rather a mahogany colour in the centre.

Dr. Munro, Jun., in his Morbid Anatomy of the Human Gullet, Stomach, and Intestines, gives some cases of enterolith; and Dr. Graves, in the second volume of his Clinical Medicine, has given an account of some intestinal calculi, composed of carbonate of magnesia, which resulted from the long-continued use of that substance, in its fluid state, internally. Mr. Clift and Mr. Children have given accounts of intestinal calculi. In the cases recorded by the former, and confirmed by Dr. Wollaston, the concretions appear to have been chiefly composed of vegetable matter, with some muriate of soda, albumen, and phosphates of lime and soda; the vegetable ingredient being chiefly derived from the fibrous matter of oats, which had been extensively used in the form of oatmeal. Some intestinal calculi analysed by Dr. Marcet consisted of curdy or caseous matter.

[Dr. Harriss having forwarded us the calculus, we submitted it to Mr. Sullivan for analysis, who has furnished us with the following report :—ED.]

" The concretion was apparently larger than a pigeon's egg, of a very light brown colour, but towards the centre of a very dark brown. It contained no distinct nucleus, although the principal part of the colouring matter appeared to exist in the centre. This was the unaltered colouring matter of the bile. It was extremely crystalline, and completely dissolved in boiling absolute alcohol, which, on cooling, deposited beautiful large plates, which proved to be pure cholesterine. I have never seen so pure a cholesterine concretion before, nor am I aware that this substance has ever been noticed as forming an *intestinal* concretion. I have, however, several times detected cholesterine in the fæces, but have not further studied the matter, although, from the curious nature of the substance, and its relation to the products of decomposition of the bile, it would be well worth investigation."

An improved Method of operating for Congenital Phymosis. By W. COLLES, F. R. C. S., Surgeon to Steevens's Hospital.

ON examination, in cases of congenital phymosis, we in general find the prepuce, especially in persons after the age of puberty, very much elongated, much more than sufficient to cover the glans penis; the skin forming the outer fold of the prepuce seems loose and natural until within about a quarter of an inch from its termination, where it is reflected back to cover the glans. Here there is a con-

traction, sometimes to such an extent as to present an orifice scarcely larger than that of the urethra itself.

The operations proposed to remedy this defect, and allow the exposure of the glans penis, may be divided into two kinds:—1st, the entire removal of the double fold of skin or prepuce, i. e., circumcision; or 2nd, the simple incision of the prepuce in the line of the penis, over the surface of the glans.

The objections to the circumcision are:—

That the surgeon, anxious to remove sufficient integument at one incision, draws forward the skin as much as possible, hoping thus to include the folds of the prepuce within his fingers, not considering that a considerable portion of the inner fold must remain covering the glans; and then, when he amputates this portion of the integument, the outer skin recedes, sometimes half way up the penis, and a considerable portion of the inner fold remains still covering the glans. He has generally removed too much of the outer, and too little of the inner fold. Thus to complete the operation will be a tedious and painful process, but to circumcise the prepuce by any other method will be much more tedious and painful.

Another objection to complete circumcision is (as I have seen), that the wound, on healing, contracts so considerably as to cause great pain in any subsequent erection; besides this, the patient is annoyed by the constant appearance of a drop of clear, ropy mucus at the orifice of the urethra, caused by the irritation of the exposed glans, extending to the urethra, and causing this increased secretion from it; and this symptom will continue long after all other inconveniences have disappeared. If we circumcise merely this narrow band of the fold of the prepuce, it in healing will contract so as to leave the patient as bad, if not in a worse condition than before the operation.

The second plan of operation is by making an incision perpendicular to the orifice, introducing a bistoury beneath and slitting up the prepuce, on some one surface of the glans, either above or below. This will leave one or two very inconvenient flaps of skin on one or both sides of the glans, and may cause curvature of the penis in erection, from a hardened cicatrix.

The only proposal combining the advantages of the two operations, is, as far as I can recollect, the plan of M. Ricord; but this is a tedious and painful operation, and, I believe, seldom performed.

I have been in the habit, for some time, of removing the deformity by a simple and very effectual operation. I seize the edge of the prepuce, at its fold forming this narrow band, in the left hand, and holding the scalpel in the right, and at right angles with the penis, I remove a circular portion of skin, about a quarter of an inch wide. The outer fold of skin, being loose, is then drawn back on the penis, leaving the glans covered by the inner and tighter fold. I then divide this layer about half way back, more or less, slitting it up exactly in the centre, by passing a sharp-pointed bistoury under it. We have now the outer fold of skin loose, with a large circular orifice; the inner, or more contracted portion, presenting also an ori-

fice, but larger by double the perpendicular incision, which forms two angular flaps.

I then turn these flaps outwards, and by a suture attach each angle to the edge of the external skin, at about a quarter of its circumference from the frænum; a slight suture at the frænum completes the operation. I then draw all forward so as to cover the glans.

In two or three days I remove the sutures, and generally find the wound healed, leaving a covering for the glans, differing in no respect from the natural and perfect prepuce; and in some cases it would be difficult to know that any operation had been performed, or that any had been required, on this part.

Cases of Obstruction of the Bowels, caused by Fæcal Accumulation in the Rectum. By R. B. TRAVERS, M. R. C. S. E., Surgeon to the Aghada Union Dispensary.

PATRICK COLLINS, aged 50, was admitted on the evening of the 13th of October, 1848, to the Cloyne dispensary, of which I then had charge. He has had no evacuation from his bowels for eight days; he is in great agony, suffering from violent bearing down, expulsive pains; complains of great distention of the rectum, feeling as if every moment he was about to have a discharge from his bowels, and is constantly making ineffectual attempts to evacuate them. His abdomen is swollen, and painful on pressure; his features are sunken, and denote great exhaustion; he is very weak, tottering as he leaves his bed to go to the close-stool; pulse 120, small and weak, and his body exhales a most nauseous odour.

On examining the rectum I found the anus open, but could not introduce my finger more than an inch into the gut, its entrance being obstructed by a mass of hardened, closely-packed fæces. He had taken several doses of purgative medicines, and had injections administered, without effect, previous to his admission.

Having ascertained the nature of the obstruction, with the handle of a common pewter spoon I gradually removed a large quantity of hard fæces from the rectum; and having cleared out the intestine as far as I could reach, I threw up two or three pints of warm water, which soon came away, bringing with it a large discharge from the bowels. I then gave him one drop of croton oil, and six grains of compound extract of colocynth, and directed that his belly should be well rubbed with turpentine liniment.

14th. Seven o'clock A. M. His bowels have been three times opened during the night; pulse 90; belly soft and free from pain on pressure: he complains of the soreness of the rectum and anus. Fomentation to the anus.

15th. Feels quite well, except for some soreness of the rectum; pulse 80; to have an oil draught; on the 18th he was discharged from the hospital.

On Wednesday, October 25, 1848, I was called to see Margaret Connor, aged 65. I found her in the following state: she has had no evacuation from her bowels for the last five days, and but very little for several days previously; she complains of acute pain and distension in the rectum, and is constantly making ineffectual efforts to evacuate her bowels; she has been unable to empty her bladder for the last two days, but the urine dribbles away when she makes a violent expulsive effort. The abdomen is swollen, and tympanitic on percussion, except in the hypogastrium, where the enlarged bladder gives a dull sound. Her skin is hot and dry; tongue dry, and covered with a brown fur; countenance flushed; pulse 112. On examining she rectum I found the anus open, its edges thick and prominent: the intestine was crammed with hardened, closely-packed fæces.

Having introduced a gum-elastic catheter, and relieved the bladder of a large quantity of dark-coloured urine, I proceeded as in the former case; and, having cleared out the rectum, I threw up about a quart of warm water, which soon came away, bringing with it the solid and gaseous contents of the lower intestine: I then gave half a drop of croton oil, and six grains of extract of colocynth in a pill. At seven o'clock, P. M., bowels twice copiously relieved, and has passed water; complains of great soreness of the rectum and anus. The anus to be fomented with cloths wrung out of warm water, and to be smeared with sweet oil.

26th. Feels quite well, except for the soreness; stupes to be continued. On the 28th she was able to leave her bed.

Patrick Coughlan, aged 50, applied at the Cloyne Dispensary on the 10th of November, 1848. He has had no discharge from his bowels for five days; he complains of violent pain in the belly, and shooting through the rectum; he is constantly forced, by a feeling of distension in the rectum, to make violent but ineffectual expulsive efforts to evacuate his bowels; his belly is tympanitic, his pulse rapid and weak, and his body exhales a most offensive odour. On examining the rectum, I found the anus widely open, its edges thick, and the rectum crammed with hardened fæces. I proceeded in this case as in the two former, and with a similar result.

William Collins, aged 15, was brought to the Cloyne Dispensary on the 27th of November, 1848. He has had no discharge from his bowels for four days; he complains of great pain and distension in the rectum, and feels a constant desire to go to stool, but without relief; he is unable to empty his bladder, but the urine dribbles away when he makes a violent effort to relieve his bowels; he has taken several doses of purgative medicines. On examining the rectum, I found a fæcal accumulation, as in the former cases, which I treated in the same way, and with a similar result.

A boy, aged 7, was admitted to the Cloyne Dispensary on the 6th December, 1848; he had no evacuation from his bowels for four days; he is suffering from violent bearing down, expulsive pains; his pulse is rapid and weak, and his tongue foul. On examination

I found the rectum full of hard fæces, which I proceeded to remove as in the former cases, and with like success.

These cases prove the importance of exploring the rectum in all cases of obstruction of the bowels, as mechanical obstacles may exist in it, which cannot be overcome by purgatives or enemata, a perseverance in the use of which will only increase the patient's danger and torment.

Enemata are useless, as no tube or pipe can be introduced through the mass; and I look upon purgatives as worse than useless, for the rectum, from its great distension, seems for the time paralysed, and is evidently unable to contract on its contents. The obstinate constipation, the bearing down, the feeling of distension of the rectum, the constant exhausting, ineffectual efforts, and the fæcal smell, form a group of symptoms which a rectal examination will prove to depend on fæcal accumulation in the gut.

The treatment of the affection is simple and direct. A pewter table-spoon, with its handle a little bent, makes an efficient instrument wherewith to quarry out the hardened mass. After the rectum has been cleared out, an operation which may occupy an hour or longer, an O'Beirne's tube, well oiled, should be introduced, and two or three pints of warm water thrown up; this will be soon followed by a free discharge from the bowels, which will give immediate relief. A drop of croton oil, with five or six grains of the extract of colocynth, in a pill, should now be given, or an ounce or two of castor oil. Leeches and fomentations may be necessary to relieve irritation or prevent inflammation of the rectum. The fæculent matter in all these cases consisted of potato-skins and undigested crust of Indian meal cakes.

MEMOIR OF SAMUEL WILMOT, M. D., F. R. C. S. I.

Surgeon to Steevens's Hospital, and formerly Professor of Surgery to the Royal College of Surgeons, &c.

Upon several occasions during the last three years we have been obliged to stay the progress of our series of biographies of the early fathers of Irish medicine, to make room for a passing notice of some recently lost friend, or eminent member of the profession, who had passed from amongst us. These were for the most part young men just entering upon their career, or those who, having got upon the ladder of preferment, were rapidly approaching a high and honourable station, when their course was arrested, often in the discharge of duties connected with their profession, or of those dictated by friendship or humanity. It is a fact, melancholy but true, that as a body of gentlemen, occupying the middle ranks of society in this country, the members of the medical profession are not long-lived. It is, therefore, a matter of some rarity when we have to record the deaths of three or four of our senior brethren, who have died since the issue

of our last Number. Of these we may mention Dr. Renny, formerly Director-General of the Army Medical Department in Ireland, the Senior Fellow, and one of the principal founders of the Irish College of Surgeons(*a*); Gerard Macklin, Esq., formerly State Surgeon, and some thirty years ago a gentleman in very great practice in this city (both of whose obituaries want of space compels us to leave over till our next publication); and Samuel Wilmot, M.D., the subject of the present memoir : all of whom have recently passed to the grave in a good old age, each having, for nearly half a century, commanded the good opinion both of the public and the profession.

Mr. Wilmot, the fourth son of John Wilmot, Esq., of the County Dublin, a gentleman of independent fortune, entered Trinity College in the year 1790, and some time after, having been called on by his father to select a profession, he unhesitatingly chose the medical. Owing, however, to a fancy of his father's, who had a strong aversion to surgery, he was, much to his vexation, obliged to confine his stu- dies exclusively to medicine. In the course of two years his father died, when Mr. Wilmot's eldest brother, seeing that his ardour for surgery was still unabated, bound him apprentice to Mr. Hartigan, then Professor of Anatomy and Surgery in the University, and one of the Surgeons to Steevens's Hospital. The zeal and diligence in prosecuting his studies and performing his duties which character- ized Mr. Wilmot during his entire professional career, soon evinced themselves in the student. At this period there were no resident pupils in the hospital, the usual duty being performed by the externs ; the visit was also at seven o'clock in the morning, in winter as well as in summer ; and though he resided a short distance out of the city, which afforded an additional obstacle to regular attendance, he was never known to be absent a single morning, so that his punctuality became proverbial. As a proof of the esteem entertained for, and the confidence reposed in him, by his collegiate companions, it may be stated that he was, though still a pupil, unanimously nominated to act as surgeon to a section of the College corps, embodied in 1798.

He obtained his diploma from the College of Surgeons in 1801, was shortly afterwards appointed Demonstrator of Anatomy in the University, and, during the last two years of Mr. Hartigan's life he acted as *locum tenens* for him, thus filling the professor's chair, and lecturing on surgery and anatomy combined. The successful manner in which he conveyed instruction, and the general satisfaction his conduct gave to the Board of Trinity College, are fully attested by the presentation from them of a very flattering address, accompa- nied by a handsome pecuniary remuneration(*b*). In 1813 Mr. Wil-

(*a*) The Council of the Irish College of Surgeons have, with becoming taste, determined to erect a testimonial to the memory of this distinguished man.

(*b*) The following is a copy of the letter presented to Dr. Wilmot :

"*Trinity College, July* 1, 1813.

" SIR,—I have much pleasure in conveying to you the unanimous resolu- tion of the Provost and Senior Fellows, adopted at a board held yesterday, returning you their best thanks for the liberal promptitude with which you

mot took his degree of M. D. in Trinity College, and at the death of Mr. Hartigan, which occurred soon after, became a candidate for the vacant chair; and so strong were his claims considered, that he was absolutely congratulated and received by his friends as the Professor elect. The unsteady scales of fortune, however, turned, in an unexpected manner, against him, and another was elected(*a*). Though disappointed at this occurrence he had soon the compensating satisfaction that his private practice was rapidly augmenting;—indeed to the circumstance of his not becoming a professed anatomist, the Dublin School of Surgery is, in a great measure, indebted for the valuable labours of Mr. Wilmot.

After Mr. Wilmot became a Licentiate of the College of Surgeons he was appointed medical attendant to a dispensary on the north side of the city ; this he held only a short time when he became one of the surgeons to the Meath-street Dispensary. This latter appointment was the means of bringing him under the notice of many wealthy merchants, who at that period inhabited the Liberty of this city ; and his attendance upon them and their families brought in annually a very handsome income. He subsequently became attached, successively, to the Locke Hospital, Sir Patrick Dun's, and Cork-street Fever Hospital, which latter, however, he held for only four years.

In 1807 he was nominated by Mr. M'Evoy as his successor in Jervis-street Hospital, in conjunction with Mr. Dease. The manner in which the celebrated M'Evoy handed the appointment over to Mr. Wilmot, then almost a perfect stranger to him except by professional character, is worthy of special mention. After sending for him to his house, he addressed him nearly in the following terms:—I hope you will excuse the liberty I take in sending for you, but it is to communicate to you that I have determined to make you my suc-

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undertook to continue the line of anatomical lectures, on the death of our late lamented professor ; and also requesting your acceptance of 100 guineas, as a very inadequate testimony of their sense of the diligence and ability with which you discharged that laborious and important duty. Permit me to add an assurance of the high respect entertained for your personal character and your professional skill by the whole body, and by none more sincerely than by your very faithful

" RICHARD GRAVES, *Register.*"

(*a*) It was believed by many persons at the time that Dr. James Macartney, the successful candidate, was an Englishman, and a perfect stranger. He was, however, a native of the county Armagh, as indeed his decided northern accent witnessed to the day of his death. He was a student for some time in the Dublin School, and then went to London, where he afterwards distinguished himself as a writer and a lecturer upon physiology and comparative anatomy, subjects just then beginning to engage very great attention. When elected to the Professorship of Anatomy in our University, he was surgeon of the Radnorshire Militia, and Lecturer on Anatomy and Physiology at Bartholomew's Hospital, London. He was also the writer of the articles Mammalia, Birds, Fishes, Hairs, Feathers, and Incubated Egg, in Rees' Cyclopædia, and author of the Essay on Luminous Animals in the Philosophical Transactions.

cessor in Jervis-street Hospital; and I make this selection because I am convinced, from your high character, you will do justice to an institution which I dearly love, as it has been the instrument by which I have been raised on the shoulders of the poor to my present position(*a*). In this hospital, when he entered upon his duties, Mr. Wilmot's skill as a surgeon, and dexterity as an operator, and especially his adroitness as a catheterist, began to be appreciated : here he also performed all the capital operations, and his success in hernia operations was particularly marked. He also gave clinical lectures and bedside instruction in this institution, and delivered a private course of lectures on surgery,—a practice at that time but little known in this city(*b*). His connexion with Jervis-street Hospital continued till 1830, when he was succeeded by Mr. Ellis. In the year 1814 he was appointed to Steevens's Hospital, in the room of Mr. Obre; and a few years subsequently was elected one of the governors of that institution. He was one of the founders of the Park-street School of Medicine in 1824, where he lectured, along with Mr. Cusack, on surgery; and after the death of Mr. Todd he was elected Lecturer on Surgery and Anatomy in the School of the College of Surgeons in 1826, as colleague with the late Mr. Colles, and afterwards, in 1828, Professor of Surgery, when that part of the subject was separated from Anatomy. He was also consulting surgeon to the City of Dublin Hospital, and surgeon to the Hospital for Incurables; besides being attached to many institutions of minor importance, which it is needless to specify. He three times filled the office of President to our College of Surgeons.

Mr. Wilmot was, as has been already stated, a very neat and adroit operator, to which the circumstance of his being ambidextered assisted. In practice his particular *forte* was diseases of the urinary and genital organs, in the treatment of which few, if any, in this or any other part of Great Britain, excelled him. The delicacy of manipulation with which he managed such cases was only equalled by the sound practical knowledge and great experience which guided him. The greater portion of his department of the surgical course, at the College of Surgeons, consisted of the description and management of those affections. As a lecturer he had invariably a full class. Stripped of everything like ornament or rhetorical display, his quiet, easy, self-possessed manner, the soundness of his doctrines, and the immense amount of experience which he brought to bear on his subject, were attractions sufficient to excite the interest and command the attention of his auditory. As a

(*a*) With the precise form of the election to the surgeoncy of Jervis-street Hospital upon this occasion we are unacquainted, as the minute-book of the institution is not accessible to us, but we suppose the successful candidate's election was secured by the paramount influence of M'Evoy.

(*b*) The late Mr. Colles commenced his career as a lecturer by giving a private course upon the theory and practice of surgery in South King-street. It will be recollected that at that time there were no private schools in Dublin.

writer, he was remarkable for simplicity, clearness, and sound sense. He did not write much. Brought up in the school of fifty years ago, he had, with most of his colleagues, a terror of appearing in print, increased by a natural diffidence and excessive hatred of display ; yet in latter life he has often expressed to us his regret at having written so little. There was one trait of Mr. Wilmot's character which should not be forgotten by his biographer: he was, in addition to his many other virtues, thoroughly honest ; not merely honest and honourable as a man, but as a practitioner;—in him the young man found, in consultation, a *friend*, as well as an adviser. No one ever heard of Mr. Wilmot's "taking a case" from a junior practitioner.

In 1848 he resigned his Professorship, and Mr. Hargrave was elected as colleague to Mr. Porter in his stead.

He died the 7th November last, aged 75. His son, Mr. S. G. Wilmot, lately House Surgeon to Steevens's Hospital, has been elected to the surgeoncy of that institution, vacated by his father's decease.

Dr. Montgomery, in his address to the Obstetrical Society about the period of Mr. Wilmot's decease, thus spoke of his character:

" None who knew Mr. Wilmot will need to be told how much and how deservedly he was esteemed and respected, loved and honoured ; not alone in the hallowed circle of domestic life and retirement, but abroad, in the wider sphere of professional duty, with the public. Few have enjoyed more entirely the affectionate regard and confidence of their patients, for the conviction could not be resisted that in him they had combined the skilful physician and the kind and sympathizing friend :

' Of manners gentle, of affections mild,
In wit a man, simplicity a child.'

" He possessed in an extraordinary degree the captivating grace of gentle courtesy, which, because it was the real spirit of the man, and not the well-feigned gloss of fashion,—the genuine radiance of Christian kindness and benevolence, and not the studied effort of affectation,—was given with equal readiness and cordiality to the junior student as to his own equal in years and knowledge,—to the maimed occupant of the straw pallet in the hospital, as to the titled sufferer on his bed of down.

" I have reason to know that through life he sincerely endeavoured ' so to pass through *things temporal* as finally not to lose the *things eternal*,' and ' to lay up treasures where neither moth nor rust doth corrupt.'—' They who were accustomed to rely upon him merely for professional aid will find it difficult to supply his place ; to his intimates and his family his loss is irreparable; but his sons will inherit the inestimable advantage of their father's good name and example' "(*a*).

(*a*) See Southey's Memoir of Gooch.

He was indeed admired and respected by all, even by the eccentric and sarcastic Brennan, who, while he lashed the profession, good and bad, friends and foes, in his witty, and, in some respects, unrivalled epigrams, panegyrized a few whom he particularly distinguished for their honesty and modesty ; among them was Mr. Wilmot :

> " ————— the last on my roll,
> A man first on merit and modesty's scroll."

Mr. Wilmot did not write any separate or distinct work ; he contributed the following communications to the periodicals :

Case of unusual Termination of Psoas Abscess, in the Transactions of the Medical Association of Ireland, vol. ii. 1818.

A Case of Femoral Aneurism cured by tying the external Iliac Artery, in the Dublin Hospital Reports, vol. ii. 1818.

A Case of Hæmorrhagic Diathesis, in the Dublin Journal of Medical Science, vol. xix. 1841.

The History of a Case of Aneurism by Anastomosis in the Cavity of the Naris, with Remarks ; and Observations on the Formation of Organic Stricture in the Male Urethra, with some Remarks on their Consequences and Treatment : in the Dublin Quarterly Journal of Medical Science, vol. iii. 1847, and vol. v. 1848. It was Mr. Wilmot's intention to have continued this latter subject when we were deprived of his valuable services. He was engaged upon a Memoir on the Diseases of the Prostate, which will appear in our next Number.

A Course of his Lectures on Stricture and the Diseases of the Prostate, delivered at the College of Surgeons, were published in the first and second volumes of the Dublin Medical Press, for 1839, in which he also published " Cases of painful Subcutaneous Tumours." —No. for February 20, 1839.

PART I.
ORIGINAL COMMUNICATIONS.

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Art. V.—*Observations upon Disease of the Prostate Gland.* By
the late Samuel Wilmot, M. D.; edited by his Son, Samuel
G. Wilmot, M. D., one of the Surgeons to Dr. Steevens's
Hospital.

Were we to measure the weight to be attached to the diseases
of a given part or organ in the body, or to estimate, *a priori*,
the probable evils to the system resulting from them, by the
importance of the function such part or organ performs in the
animal economy, we would frequently be led into very serious
error. This observation, to the truth of which every reflect-
ing practitioner will at once subscribe, applies with peculiar
force to diseases of the prostate gland. This little organ, in-
significant in regard of its office, and worthy of not much
attention, except to the anatomist, becomes, in consequence of
the morbid changes to which it is liable, an object of the
greatest interest to the pathologist, of anxious responsibility to

the surgeon, and a source of extreme distress, mental as well
as bodily, to the afflicted patient.   A sufferer who will main-
tain a cheerful, nay, an almost happy state of mind, under the
most intense bodily pain, in connexion with extensive irreme-
diable disease elsewhere, will, in protracted aggravated pros-
tatic disease, be reduced to a condition of mental prostration
and depression truly deplorable, and even sometimes border-
ing on fatuity.   The physical condition of the patient is in no
way better than the picture drawn of his mental wretchedness.
The prostate gland, encircling as it does the neck of the blad-
der, will, when affected with even the most common change
to which it is subject, become successively—*pari passu* with
its progress—the cause, first, of irritability of the bladder;
secondly, of difficulty in expelling its contents; thirdly, of re-
tention; and lastly, giving origin to a train of urinary miseries
similar to those which occur in old and neglected strictures of
the urethra.   The morbid alterations to which the gland is
liable are many and various:—acute and chronic inflammation,
abscesses, hypertrophy, malignant degeneration, and alteration
of its secretion.   For the present, however, I purpose to con-
fine my remarks to that disease termed the chronic enlarge-
ment of the organ.   Now, prior to the description of this dis-
ease, a few observations upon the anatomy of the prostate in
early life, before it has been overtaken by pathological change,
will be necessary for junior readers.   This organ is placed
around the neck of the bladder, and includes about one inch
and a quarter of the urethra; in shape and size it is compared to
a chesnut; its structure is composed of a congeries of follicles,
bound together by a dense fibrous capsule, which gives to the
organ a firm resisting feel; the cells open by numerous small
ducts into the sinus which lies on each side of the veru mon-
tanum.   From the position of this part, it is clear that a very
slight enlargement of, or change of figure in it, partially or
completely, must more or less interfere with the due perform-
ance of the bladder's office.

It has been stated that few men arrive at the meridian of life whose prostate gland has not undergone some modification in size, shape, or structure; and to the truth of this general proposition my own experience would certainly give assent. Why it should undergo these changes almost uniformly at this particular period of man's existence, must, with the other senile changes, remain a problem unsolved, until the veil that shrouds our understanding be removed by the advent of an improved pathology, based upon more enlightened physiology. A question arising from the proposition advanced of the universality of these morbid conditions of the prostate gland suggests itself to every reflecting mind:—why symptoms of urinary irritation and impediment are not invariably met with at the period of life specified? To this it is not easy to find an answer. It is true, enlargement of the organ may occur in a direction which will not make any incursion upon the canal of the urethra, or the neck of the bladder. And if mere condensation of tissue, without increase of size, be the change which takes place, the bladder may discharge its functions with little interference. Generally, however, I think the circumstance of a diseased prostate giving manifestation to its existence or not, depends upon whether the local irritability be excessive or deficient. Similar conditions, in a constitutional point of view, regulate, we know, the degree of disturbance set up in the system in consequence of an injury, or some local disease. Now, as in one individual the slightest local change or impression will kindle high constitutional derangement, while in another the system seems to take little, if any cognizance of considerable local lesion, so an organ or part in one instance will submit, without evidencing disturbance, to circumstances which in another would give rise to serious inconvenience and unpleasant results. In illustration of this observation, by analogy, we may point to the stomach. Here we will see that in tumours pressing upon or otherwise interfering with the pylorus, the extent to which the viscus has its function impaired bears no direct proportion to

the degree of disease or its apparent power to incommode it by position or other causes. The same holds good with stone in the bladder and many other cases. And by this same view we find, I think, a not irrational answer to the question above propounded, and an explanation of the fact that there is frequently a disproportion observed between the prostatic disease and the urinary annoyance the result. Increase of volume, the effect of simple hypertrophy, which is attended by much vascular turgescence, is the pathological condition which constitutes the disease called chronic enlargement of the prostate gland; and it is a change effected in obedience to one of the senile laws that regulate the human mechanism. This morbid alteration is generally accompanied with induration ; more rarely the gland retains its natural degree of consistence, and in a few instances it has been found even softer. Sometimes the tissues of the part assume a cartilaginous hardness, and present a nodulated feel. This condition it is that gave rise to the imposition of the improper title " schirrus" upon this affection. Hypertrophy, according to Andral's views, consists in an increased number of the molecules of the tissues of the part engaged, depending either upon excessive action of the assimilative powers, or upon deficient energy in the process of disassimilation, by which the balance between these two operations, which keeps at a definite limit all the parts and organs in the body, is destroyed.

Enlargement of the prostate gland may be limited or unlimited, according as one, two, or all the lobes of it are engaged. The left lateral lobe is the one most usually the seat of this morbid change. When it enlarges, the same side of the urethra is, as a necessary consequence, displaced, presenting a convexity which looks to the opposite side, and is also elongated. In the introduction of an instrument in such a case, the catheterist must recollect, when he arrives at the obstruction, to incline its point to the right side. When the right lateral lobe undergoes increase of volume, a similar change takes place in

the urethra on that side, and the catheter must, in the intro-
duction, be directed to the left side. When both lateral lobes
are increased in size, the prostatic portion of the urethra is ren-
dered in proportion deep and narrow. If they be equally en-
larged, the passage will be straight, and a small instrument may
pass with ease; if there be inequality in their proportions, the
canal must, to a certain extent, be tortuous, and some manœuv-
ring will be required to gain entrance for an instrument into
the bladder. Delicacy of touch, prudence, patience, and self-
possession, are requisites to guide the operator's hand, and to
insure success in these cases. When the third or middle lobe
is enlarged, there is generally considerable difficulty in expel-
ling the urine, and frequently much irritation of the organ;
while the degree of difficulty in micturition, and the facility
with which an instrument is passed, depends upon whether the
tumour formed by the lobe be fixed or moveable. In the case
of a gentleman whom I attended for diseased prostate, he was
not able to pass a drop of urine by his own unaided efforts,
still I never experienced the least difficulty in introducing a
catheter; and this circumstance, as proved by *post mortem* ex-
amination, was due to mobility of the middle lobe, which
caused it to act like a valve. When the bladder contracted to
expel its contents, the urine pushed it forward against the ori-
fice of the urethra, while an instrument passed from without
readily pressed it back and surmounted the eminence. When
the prominence caused by the enlargement of the middle lobe
is fixed, which is usually the case, the surgeon has often much
difficulty to encounter in passing a catheter. Here the great
object should be to keep the extremity of the instrument close
to the arch of the pubis in the first act of depressing the handle;
at the same time making pressure on the instrument in the
perinæum is very often followed with success.

In some instances a dilatation of the urethra takes place on
each side of the diseased lobe, thus forming two lateral sinuses;
in such case a small catheter may, by dexterous manipulation,

find its way into the bladder. When the three lobes of the prostate gland are simultaneously enlarged, the difficulties to the surgeon, when called upon to relieve a retention of urine, are generally trebled; and should the lateral lobes be at the same time unequal in their size, or nodulated upon their urethral surface, the prostatic portion of the canal does then indeed present a passage to steer through which the catheterist requires no small share of dexterity and of educated touch. As no medicine will be of the least avail in relieving retention of urine arising from prostatic disease, the surgeon must depend entirely upon the employment of the catheter; his position, therefore, becomes most responsible and arduous.

The instrument best suited in general for introduction in cases of prostatic disease, is a moderate-sized gum-elastic catheter, longer than usual, and I prefer to use it without a stillet if possible. Should it, however, be the third lobe which is enlarged, then the addition of the stillet is usually necessary, and we must set the extremity of the instrument to as great a curve upwards as the urethra will allow. This being done, when we arrive at the obstacle we must slowly, steadily, and gently depress the catheter, pressing upon it at the same time through the perinæum. Should this fail after two or three attempts, let us withdraw the stillet a short distance, which expedient will have the effect of elevating the instrument's point, and it will generally glide over the prominence. If we be foiled in this also, the index finger of the left hand should be introduced into the rectum, and the instrument be thus attempted to be raised over the opposing eminence. All these manœuvres will frequently fail, and the success which has generally attended our catheterism will appear to have utterly forsaken us; but on no account let our disappointment and vexation induce us to exercise unwarrantable force in the accomplishment of our object. We must make repeated trials, adopting in succession the different plans already specified, and, after steady perseverance, we will often

succeed in the most unexpected and gratifying manner. In the passage of a metallic catheter in cases of enlarged prostate (and this kind of instrument will often be easily introduced when others have failed), we must regulate its movements according to the rules before laid down; but here, while depressing the instrument, a phenomenon often occurs which to the experienced hand is a conclusive announcement that it has passed the obstacle, and is fast taking the proper road into the bladder. I allude to the sensation as if the instrument were, by some suction-power of the bladder, drawn from the hand of the surgeon. Cases will occur in which all our best directed and most judicious efforts to pass a catheter will signally fail. What then is to be done? The urine is accumulating, and a speedy evacuation of the bladder is imperatively demanded. In this dilemma the surgeon must choose one of two expedients,—either to force a passage through the prostate, or to tap the bladder above the pubis. As to the propriety of the first mode of gaining access to the bladder, surgeons are divided in their opinion; and the arguments of those who contend that the practice is improper are based upon the grounds:—First, that the patient can never afterwards pass urine without the assistance of an instrument; second, that there is extreme risk from hemorrhage. That the first of these objections does not invariably obtain, is proved by the following case.

Mr. ———, a man between fifty and sixty years of age, residing in England, had some difficulty in making water in consequence of an enlarged prostate gland. After having drunk too freely one evening he was seized with retention of urine. The practitioner called in to relieve him, with much difficulty, and by the employment of great force, succeeded in drawing off the urine. The patient continued well for four years, during which time he never needed the introduction of a catheter. Having come over to Dublin on business, he fell in with an old friend, and again exceeded the proper limits in

the amount of his wine, the result of which was an attack of retention of urine. I was called to see him, and found not the least difficulty in emptying the bladder. Not long afterwards he was seized with a severe attack of pneumonia, of which he died; and it was kindly permitted me to examine the prostate gland. I found a passage through the middle lobe; it was in caliber about the thickness of No. 8 catheter, and was lined with mucous membrane.

The second is a very valid objection. It is not, however, always necessary to wound the gland in order to bring on hemorrhage. I have witnessed it very smart where the catheter was handled with extreme delicacy and gentleness. Were I obliged in a particular case to penetrate the prostate in order to draw off the urine, I would leave the instrument in the bladder for some time, by which means the chance of hemorrhage must be greatly diminished, if it be not altogether prevented. We sometimes meet with hemorrhage from the prostate occurring spontaneously, and after death the cause is discovered to be ulceration of its surface, or a granular condition accompanied with much vascularity. When the organ is the seat of fungus hæmatodes, which it sometimes, though very rarely, is, the bleeding takes place often to exsanguification. I saw recently a case of this kind in a gentleman aged 60. Bleeding from the prostate, whatever may be the cause, always deserves serious attention. Sometimes it will stop spontaneously; at other times the ordinary treatment, absolute rest, cold to the perinæum and region of the bladder, cupping over the sacrum, low diet, and purgation, will arrest it: often, however, it is so obstinate as to call upon all the practitioner's resources. Tincture of digitalis, alum, and sulphuric acid, have severally proved efficacious in my hands; but the medicines upon which I place most reliance in bad cases are acetate of lead with opium, gallic and tannic acids, Ruspini's styptic, and matico. Tannin I found in one case to act nearly like magic. After the arrest of the hemorrhage our anxiety does not always

terminate, for the bladder sometimes becomes filled with coagulated blood, which distends it so as to form a firm tumour, perceptible above the pubis; this gives rise to all the distressing and urgent symptoms of total retention of urine, To free the bladder of this blood is, therefore, the object indicated. To accomplish it a gum-elastic catheter must be introduced; and, after breaking up the coagulum, tepid water should be injected. This process should be repeated two or three times, or oftener, according to circumstances; but it must be done with extreme care and caution. I have seen a syringe applied to the catheter productive of good results, by facilitating the removal of the broken-up coagula.

I have witnessed two cases in which these measures having failed to achieve the desired end, the bladder was opened above the pubis, as in the high operation of lithotomy, and the blood removed, but in neither instance was life preserved. It strikes me the lateral operation would be a better and a safer one.

The symptoms of the chronic enlargement of the prostate gland are, in the commencement, purely local, but, as the affection progresses, they become constitutional also, and in the advanced stages are both grave and distressing. They creep on frequently in the most insidious manner; and the first intimation a patient often gets of his misfortune in being the subject of prostatic disease is the announcement of it by the surgeon who has been called in to relieve him of a retention of urine brought on by some indiscretion,—either by indulging too much in the pleasures of the table, or after being exposed to wet, cold, or fatigue. I was called some years ago to see a gentleman about seventy years of age, who had been seized with retention of urine under the following circumstances:— He had accompanied some ladies to a review in the Phœnix Park, where he had a desire to make water several times, but, having had no opportunity, he was obliged to disobey the calls. When he returned home, on going to make water, he could not pass a single drop. I introduced a catheter without dif-

ficulty, but found that the gland was considerably enlarged;
still this patient positively assured me he never before expe-
rienced the least urinary annoyance. I have seen many such
cases. Generally the patient becomes aware of the first devia-
tion from the natural condition of the prostate by observing
that he is obliged to make water three or four times in the
twenty-four hours oftener than heretofore; and soon he dis-
covers he cannot propel the stream of urine with the accus-
tomed force, without making undue exertion. After a lapse
of time, as the gland enlarges, the bladder cannot ever com-
pletely empty itself, and the desire to make water returns al-
most immediately after each evacuation, and this produces
some forcing and straining. In the course of a still longer
period all the symptoms described increase, and the patient
becomes, in addition, subject to frequent attacks of retention
of urine, which impending evil he can only avert by regimen,
constant care of his general health, and abstinence from sexual
excitement. Up to this stage there may or may not be pain.
Sometimes weight in the loins is complained of, pain along the
sacrum, over the pubis, or down the inside of the thighs, and
irritation in the glans penis; frequently there is severe pain
felt at the neck of the bladder during micturition, especially
as the last drops of urine are expelled; and if the gland be
much enlarged, and have grown towards the rectum, irritation
and uneasiness in this part will be felt. Should the patient be
negligent of himself, or omit to obtain surgical advice, the dis-
ease will steadily augment, and sooner or later, according to
circumstances, other and distinct symptoms are set up.

The bladder begins to give evidence of inflammation of its
mucous coat, as a consequence of which its irritability becomes
much increased; pain is, if previously absent, superadded, if
present, aggravated; and mucus is secreted and expelled along
with the urine. At first the secretion is semi-transparent and
tenacious, but as the inflammation continues and becomes
more chronic it changes to muco-purulent, and the urine as-

sumes alkaline characters, being sometimes in smell very offensive. In the advanced periods of this stage of prostatic disease, the bladder, from its constant efforts to overcome the steadily increasing obstruction offered by the growth of the gland, becomes greatly thickened in its muscular parietes, and eventually the impediment becomes so great that the bladder is never able to empty itself of more than half its contents; there is, therefore, a constant partial retention, which, if not relieved regularly by the catheter, terminates in incontinence of urine. In these cases the urine is highly ammoniacal, the phosphates abound and appear like wetted hair-powder, thickly sprinkled through the mucous discharge. I have sometimes seen the interior of the bladder coated over with a layer of phosphate of lime. Occasionally blood and lymph are seen mixed with the mucous secretion: the first, indicating abrasion of the membrane; the second, increase of the inflammation: sometimes pure pus alone constitutes the discharge. The symptoms of the disease are now very aggravated; there is constant desire to pass water, which the inflamed mucous membrane, further irritated by the alkaline urine, makes more urgent; there is excessive pain also by the continual strong contractions of the thickened bladder, to rid itself of the irritating fluid, against the barrier offered by the prostate, and the additional difficulty occasioned by the mucus. In aid of the bladder all the voluntary powers are brought to bear in the expulsion of the urine, and excessive forcing and straining are the result. It is impossible to conceive a condition in which an unfortunate patient can be placed more truly pitiable than this. The ureters and kidneys finally become diseased, as they do in stricture or in other obstructive affections of the urinary apparatus, and ere long death kindly puts a stop to a complication of nearly unequalled human miseries. Very frequently phosphatic calculi are found in the bladder of prostatic patients, and in such cases the symptoms are extremely distressing, from the rough bodies irritating the sensitive surface of the inflamed mucous mem-

brane. I saw in St. Vincent's Hospital, a few months ago, a case of enlarged prostate, complicated with stone in the bladder; the symptoms were so distressing and urgent that the operation of lithotomy was undertaken, and skilfully performed by Dr. O'Ferrall. Much oftener calculi are formed in the ducts of the prostate, but it is only when they protrude or become detached into the urethra, that they give rise to inconvenience. In some cases the prostatic portion of the urethra, instead of, as it generally is, being rendered narrow in enlargement of the gland, becomes considerably dilated, so as to be capable of containing an ounce or more of urine; sometimes a large pouch, like a secondary bladder, is formed, which is perceptible to the finger, *per rectum;* in both cases the surgeon is very often deceived in passing a catheter, for, from seeing urine flow through it, he concludes it is fairly in the bladder, whereas it has not gone beyond the pouch or dilatation.

The bladder becomes the seat of many curious and interesting pathological changes, the result of the obstruction offered to its efforts to perform its duty, by the enlarged prostate:—great thickening of its muscular coat, and remarkable diminution in the capacity of the organ; protrusions of its mucous coat through the muscular, constituting sacs of various sizes, called herniæ, which are frequently filled with pus, and lined with phosphatic deposits. As these morbid changes are not peculiar to diseased prostate, I will not here dwell further upon them.

The prostate, when affected by the disease we have been considering, becomes sometimes the seat of suppuration. This occurrence is fortunately rather uncommon. Upon its symptoms and treatment it is not my intention, however, at present to comment. The treatment of chronic enlargement of the prostate gland we approach with intentions very different from those which actuate us in other affections; for this disease being, in fact, a natural change (if we be allowed the phrase),—one of the consequences that result from the declining powers of the

human machine,—we cannot hope by art or science to make it yield. We have it in our power, however, greatly to retard its progress; and if the patient, though he suffer much, will permit the interference of a surgeon, and scrupulously attend to his instructions, and observe the restrictions imposed upon him, he will generally pass a tolerably easy time, and live for a considerable period. The use of the catheter, leeches to the perinæum when indicated, keeping the bowels free, regular habits, avoidance of excesses at the table, also of wet, cold, and fatigue, and especially exemption from venereal gratification, constitute this treatment. When the mucous membrane of the bladder becomes inflamed, we can then do much to relieve the patient. Leeches to the hypogastrium when the inflammation assumes a degree of acuteness, and in all its stages blisters to the sacrum, will be productive of much benefit. Along with this, small doses of blue pill and cicuta I have found to act very favourably. When there is copious mucopurulent discharge, the infusion of bucchu and the decoction of pariera brava, will be found extremely serviceable. I prefer the latter medicine, but it should be taken in much larger doses than those usually prescribed,—from half a pint to a pint in the twenty-four hours. The various balsams and turpentines, when the inflammation is purely chronic, and no pain attending it, are very useful. I saw a case of cystirrhea, which had resisted treatment for a long time, effectually and rapidly cured by drachm doses of balsam of capivi, largely diluted by being taken with soda water. The chia turpentine I am inclined to extol, from its good effects in a few cases of this kind in which I have employed it. When the urine is alkaline (which is almost always, but not invariably, the case when mucus is present), and is loaded with the phosphates, mineral or vegetable acids are, of course, to be administered. I must say I give preference to the former, for, independently of their fulfilling, in the urine, the indication required, they prove general tonics to the system, and this is much needed. A favourite com-

bination of mine is a wine-glassful of equal parts of decoction of pariera brava and infusion of bucchu, with from ten to twenty drops of nitro-muriatic acid; to this, tincture of hyoscyamus may, if necessary, be added. This mixture, taken three times a day, I have seen to change completely, in a very short space of time, the character of the urine, and to diminish greatly, if not entirely remove, the accompanying mucus. I have been lately giving benzoic acid, in five-grain doses, in these cases, and can speak of it in terms of high commendation. Injecting into the bladder astringent, anodyne, or acidified lotions, when very carefully done, and with much watching to meet any new inflammation that may be set up by the procedure, I have seen attended with happy results; but if these precautions be not observed, bad consequences invariably follow. When the patient is distressed with constant and irresistible straining and forcing to make water, opiate suppositories combined with belladonna, will give great relief, and during their soothing operation the catheter must be passed regularly at stated intervals, and the patient must be enjoined to make no efforts of his own to empty the bladder.

All the treatment we have been describing is merely palliative. Can we, in the least degree, reduce the absolute volume of the prostate by influencing the conditions upon which its growth depends, viz., excessive assimilative or deficient disassimilative power? Mercury and iodine are capable of accomplishing this end in many parts and organs of the body, but I never found them exercise any very palpable effect upon prostatic enlargement. Injections of hydriodate of potash into the rectum have been said to be decidedly useful in diminishing the size of the gland; and I have been told upon the credible authority of my friend, Mr. Fleming, that in the case of an old gentleman whom he attended for retention of urine, arising from a very large prostate, he employed the hydriodate of potash injections *per rectum,* and in a very short period a reduction in size became perceptible. The plan recommended

of cutting down upon and dividing the gland, may, if the patient be younger than usual, and the disease without complication, be just allowable ; though, in a disease such as the prostatic, palliation is, I think, better than the adoption of curative measures that involve the least risk. To subject, however, an aged individual to this, an operation fraught with nearly as great danger as that of lithotomy, is, in my mind, an act little short of homicide.

ART. VI.—*On the Coagulability of Human Milk.* By WILLIAM D. MOORE, A. B., M. B.

HAVING some time ago commenced a series of experiments on human milk, principally with a view to the observation of such changes as might be produced in its physical and chemical properties by the supervention or existence of disease in the nurse, and to the establishment of rules by which such morbid changes might be recognised, I found myself in a great measure anticipated by the appearance of a paper by Dr. Peddie, of Edinburgh, " on the Mammary Secretion and its Pathological Changes," &c., published in the Monthly Journal and Retrospect of the Medical Sciences, for August, 1848, and containing much valuable information on the subject.

I need not here dwell upon the great importance of being able to decide whether the secretion intended by nature for the nourishment of the infant be in a healthy state or not. This is sufficiently obvious. But I may remark that any process for determining this question by chemical means should, in order to be practically useful, be simple, easy of execution, and should require but little time for its accomplishment. I did not, therefore, propose to institute in every case an elaborate analysis, but simply to note the specific gravity, the reaction, the appearance and taste of each specimen, the amount of cream thrown up in a given time, the appearance of the milk under

the microscope, and the effect produced upon it by the application of heat and acids.

Being able, however, to refer the reader to Dr. Peddie's paper for an account of the changes produced in it by disease, I shall proceed to consider some of the leading characteristics of healthy human milk, especially those in which it differs from the mammary secretion of the animals whose milk forms in these countries, either ordinarily or occasionally, part of the food of man; and as one of the most striking of these differences is its behaviour in relation to heat and acids, the disputed question of its coagulability will form the principal subject of this paper. In conclusion, I shall endeavour briefly to draw such practical inferences as the facts observed may warrant.

That a point which might, at first sight, be supposed to admit of an easy demonstration, should be a matter of difference of opinion between eminent chemists, may well excite surprise; but that the fact is so will be at once seen by placing in juxtaposition the following statements made by two who deservedly rank among the first authorities on animal chemistry, I allude to the late Professor Berzelius and the late Dr. J. Franz Simon. "The most essential character," says the former, "of woman's milk consists in this, that the caseous matter which is found dissolved in it forms soluble combinations with acids, in consequence of which we cannot coagulate it by means of these latter"(a). The latter, on the contrary, speaking of the "ordinary milk of the human female," asserts that "everything that precipitates caseum coagulates milk"(b). Dr. Peddie, in the paper I have already alluded to, states that human milk "will precipitate curd from the serum or whey, if mixed with the mineral, acetic, or lactic acids"(c).

(a) *Traité de Chimie*, par J. J. Berzelius, traduit par Me. Esslinger; tom. vii. Paris, 1833.

(b) Animal Chemistry with reference to the Physiology and Pathology of Man; Sydenham Society Translation, vol. ii. p. 51. London, 1846.

(c) Monthly Journal, &c., August, 1848, p. 66.

Professor Young concluded, from numerous experiments, that human milk is not coagulated by rennet; and that acids, whether mineral or vegetable, mixed with it in large quantity, do not produce any separation of curd from whey, whether the milk be tepid or raised to the boiling point(*a*).

Berzelius, on the contrary, states that, although the milk of woman cannot be coagulated by acids, rennet coagulates it regularly. One part of rennet to 500 of milk, he says, coagulates the latter at a temperature between 40° and 50° (104° and 122° of Fahrenheit), but slowly; the caseous matter, he adds, does not unite into a mass, as in cow's milk, but takes the form of isolated flakes(*b*).

The experiments of Professor Young were confirmed by Dr. Ferris, whose Dissertation on Milk gained the Harveian prize medal at Edinburgh in the year 1782(*c*).

In a pamphlet entitled "the Analysis of Milk, and the different Species thereof," published in 1762, Dr. John Rutty, of Dublin, it is stated that "woman's milk, coagulated by the same quantity of rennet as cow's milk, gave of curd very little, even not one-sixth of what cow's milk did"(*d*).

The late Dr. Joseph Clarke, who so long held an eminent rank in this city, and whose extensive experience demands attention for any opinion advanced by him, conceived that human milk, in a healthy state, contains little or no curd; and that viscid cream rejected by the stomachs of infants has given rise to the opinion of curd in the milk vomited by them(*e*).

Having stated the following as a generally received opinion among medical writers, viz., "that human milk is coagulated in the stomach of infants, and that it is coagulable by acids,

(*a*) See Dr. Clarke's paper in the Transactions of the Royal Irish Academy for 1788, p. 174.

(*b*) *Loc. cit.*   (*c*) **Dr. Clarke's paper.**

(*d*) A memoir of Dr. Rutty is given in the third volume of the present series of this Journal, p. 555.

(*e*) Transactions of the Royal Irish Academy, 1788, pp. 177, 178.

ardent spirits, and other known coagula," Dr. Clarke proceeds
to inform us that he made a great number of experiments " in
endeavouring to detect the curd of human milk, but without
success." For this purpose he made use of all the different
kinds of acids, ardent spirits, infusions of infant's stomachs,
&c., in various proportions and degrees of temperature, and,
except in one or two instances, never could perceive anything
like curd. The following experiment I shall give in Dr.
Clarke's words, as I shall have to allude to it hereafter:

" I took out the stomach of a fœtus deprived of life in the
birth by lessening the bulk of its head. The gastric fluids
in such a stomach could neither be altered by disease nor the
admixture of food. I infused it in a small quantity of hot
water, so as to make what might be considered a strong infu-
sion. To equal quantities of cow's and human milk I added
a tea-spoonful of the above infusion ; in a short time the
cow's milk was firmly coagulated, the human not in the least
changed. At the end of the first hour I added a second tea-
spoonful of rennet to the human milk, and soon after a third,
without producing the smallest perceptible tendency to coagu-
lation."

Johnson(*a*) states that " all the methods of coagulation used
in cow's milk succeeded in coagulating human milk, except
vinegar, and the mineral acids very much diluted with water."
In the coagulation of cow's milk he had employed the vitriolic,
nitrous, muriatic, and phosphoric acids, vinegar, and the infu-
sion of the dried stomach of a calf.

" It appears," he adds, " that the longer a milk is drawn,
from the time of lying-in, the more caseous matter it contains,
and then it is coagulated by acids; but the coagulation is always
viscous, and never acquires that gelatinous consistence observed
in the caseous matter of the cow." He subsequently quotes

(*a*) History of the Progress and present State of Animal Chemistry, by
W. B. Johnson, M. B. London, 1803, vol. i. p. 156.

the experiments of Stipriaan, to the effect that " human milk was not coagulated by any of the acids, whether heat was used or not, nor by the rennet of the lamb or calf," but that it " was coagulated either by letting it become sour and boiling it, or using old sour milk; this cheese," he adds, " was much finer, more tender, and softer than that of other milk; it, however, cannot be collected in a lump."

" It is, perhaps," continues Mr. Johnson, " owing to the great difficulty, if not impossibility, of procuring this milk in a nearly similar state, which some authors have attributed to the irregularity of the human mode of living, that the experiments of chemists differ so much respecting its coagulation, as there is no other milk which is so readily affected by the difference of nourishment." He concludes by giving a view of Dr. Clarke's experiments and opinions on the subject.

Another suggestion of his is, that " the property of human milk, in not being always subject to coagulation by acids, appears to depend on the small quantity of caseous matter it contains, and its extension in this fluid; and this explanation," he says, " is confirmed by Scheele's experiments, which prove that cow's milk, diluted with six parts of water, loses the property of coagulation"(*a*).

Fourcroy asserts that all the processes which coagulate the milk of the cow produce the same effect upon that of a woman, but that the cheese is, in general, softish, unctuous, and does not acquire the same concrete state(*b*).

Among the milks of fifteen women which Meggenhofen examined, three only were coagulable by hydrochloric and acetic acids(*c*).

(*a*) I found no difficulty in coagulating cow's milk, diluted with six parts of water, by boiling it with a very minute quantity of nitric, hydrochloric, or acetic acid.

(*b*) A General System of Chemical Knowledge, &c., translated from the French of A. F. Fourcroy, by William Nicholson. London, 1804, vol. ix. p. 536.

(*c*) Berzelius, *loc. cit.*

Dr. Carpenter observes that " the casein of human milk is much less precipitable by acids than that of the cow, very commonly resisting the action of the mineral acids, and even that of the acetic, but being always coagulated by rennet, though the curd is long in collecting"(a).

With a view to ascertain which of the foregoing apparently contradictory classes of statements is correct, or, if possible, to reconcile them, I performed a great number of experiments, and have finally come to the conclusion, that the casein of human milk forms, with most acids, two sets of compounds, the one, when a certain quantity of acid is used, soluble in water, the other, when a different quantity of acid is used, insoluble in water(b), and that accordingly as each experimenter formed the soluble or the insoluble compound, he reported the milk on which he operated to be incapable or capable of coagulation with acids; and as the amount of acid necessary to coagulate the casein, will vary with the quantity of the latter which may happen to be present in a given specimen, it is possible that opposite results may have been arrived at by the same experimenter using the same quantity of acid with different samples of milk, giving rise to such statements as that I have just quoted from Dr. Carpenter, that " the casein of human milk very commonly" (but not always) " resists the action of acids."

(a) Principles of Human Physiology, by William B. Carpenter, M. D., F. R. S.   Third edition.   London, 1846, p. 667.

(b) This might perhaps be deduced from two observations made by Simon in two different works ; one, that which I have already quoted from his Animal Chemistry, that " everything which coagulates casein coagulates (human) milk."   The other is given by Berzelius in the ninth volume of his *Lehrbuch der Chemie* (1840), p. 699, and is probably taken from Simon's work, entitled " *Die Frauenmilch nach ihrem chemischen und Physiologischen Verhalten*," which I have been unable to procure in Dublin. It is to the effect, that by far the greater number of the combinations of human casein with acids are soluble in water.   These two apparently opposite statements are only reconcilable on the supposition of the existence of the two classes of compounds.

I shall now proceed to describe some of the experiments which have led me to this conclusion. In each experiment I have, in consequence of the difficulty of obtaining a large supply of human milk, operated on two fluid drachms; and that the comparative experiments might be similar in every respect, I have used a like quantity of those milks which were more easily procurable.

EXPERIMENT I.—A portion of cow's milk, measuring two fluid drachms, boiled with a single drop of nitric acid, s. g. 1·417, was immediately resolved into a firm curd and whey; the same result took place when two fluid ounces of milk were used with a single drop of the acid.

EXPERIMENT II.—Two drachms of human milk, boiled with one drop of the same acid, remained uncoagulated. Filtered, a slightly opaline solution passed through, which, when examined under the microscope, was found to be quite free from milk globules. A light, creamy deposit remained on the filter, which, when mixed with a drop of water and examined under the microscope, was found to consist chiefly of unaltered milk globules; the presence of casein, in combination with acid, was demonstrated in the filtered liquid, by the addition to a portion of it, of a few drops of a solution of ferrocyanide of potassium, which immediately produced a copious precipitation(*a*).

The filtered solution was treated with ether. On allowing the latter to evaporate spontaneously, a white residue was obtained, which afforded a clear solution with water of caustic potash.

EXPERIMENT III.—Two drachms of human milk were boiled with five drops of the same acid. Coagulation took place, but was not very manifest until after the lapse of some hours. It was then filtered. A copious caseous precipitate remained on

(*a*) " The soluble combinations of caseous matter, with acids, are precipitated by ferrocyanide of potassium."—Berzelius, *op. cit.* vol. vii. p. 600.

the filter, which, when examined under the microscope, was found to contain numerous unaltered milk globules; the filtered liquor was quite clear, and on the addition of ferrocyanide of potassium exhibited no trace of casein. It was evident that in this case the acid coagulated the entire of the casein present in the milk.

Experiment IV.—The last experiment was repeated with ten drops of nitric acid, with the same results, except that the coagulation took place immediately.

I may here remark that the quantity of acid necessary to produce a coagulation sufficiently rapid to be immediately visible, will vary with the amount of casein present in the particular specimen of milk. I have sometimes observed immediate coagulation on using five drops, and sometimes ten have scarcely produced this result; but in no specimen that I have examined have I failed to produce it by adding a sufficiency of acid.

Experiment V.—Two drachms of human milk were boiled with two drops of dilute hydrochloric acid; no coagulation was produced; the filtered solution was almost perfectly clear; and ferrocyanide of potassium produced a copious precipitate. In this case it is evident that, as in Experiment II, a soluble combination of casein with acid had been formed, and passed through the filter. One drop fully coagulated two drachms of cow's milk.

Experiments VI., VII.—Were repetitions of the fifth experiment, substituting twenty drops and one drachm, respectively, of dilute muriatic acid, for the quantity used in No. v.; coagulation was produced in both cases, slowly in No. vi., immediately in No. vii. The filtered solution was clear; a caseous deposit remained on the filter, and the filtered liquid gave no precipitate with ferrocyanide of potassium.

It will be seen that in the foregoing experiments with nitric and hydrochloric acids, the compound of casein and acid was soluble when a small quantity, but insoluble when a large quantity of the latter was employed. With acetic acid, how-

ever, the very reverse is the case, as will be seen by the following experiments.

Experiment VIII.—Two drachms of human milk were boiled with one drop of strong acetic acid; a perfect coagulation took place; the filtered liquid gave no precipitate with ferrocyanide of potassium; the coagulum on the filter contained unaltered milk globules.

Experiment IX.—A similar quantity of the same milk was boiled with ten drops of strong acetic acid; a coagulation took place, but to a much less amount than in Ex. viii.; the filtered fluid gave an abundant precipitate with ferrocyanide of potassium.

Experiment X.—The foregoing experiment was repeated with half a fluid drachm of strong acetic acid; no coagulation took place; the filtered solution gave a copious precipitate with ferrocyanide of potassium.

In the foregoing experiments the acid solutions of casein passed through the filter (consisting of the ordinary coarse filtering paper) slightly opaline; they were quite free from milk-globules: the filtered fluids which contained no casein were transparent as water. When cow's milk, human milk, and boiled human milk, were passed through the same paper, the filtered fluid was little altered, contained numerous milk-globules, and, although some cream was retained on the filter, threw up a layer of that substance.

When cow's milk and goat's milk are mixed, without the aid of heat, with a very minute quantity of acetic acid, or with almost any proportion of nitric or hydrochloric acid, a strong coagulation immediately takes place. On the other hand, when ass's or human milk is mixed, without heat, with a very minute portion of acetic acid, or with a large portion of nitric or hydrochloric acid, no change is at first perceived. After some time a separation of soft flaky coagula takes place in the ass's milk, and a similar change occurs more slowly and less visibly in the human milk. If the four milks be now

filtered, and the filtered fluids be tested with ferrocyanide of potassium, no precipitation will take place, except in the specimens of human milk and ass's milk, which were treated with acetic acid, showing that in the other ten cases the separation of casein by means of acid has been complete.

The casein of human milk, when coagulated by an acid, does not form a dense, firm coagulum, like that of the cow or goat, but is soft and flaky, and generally floats near the surface of the fluid; this latter circumstance, however, is owing rather to the tenuity of the milk than to any peculiarity in the coagula; for, when cow's milk is much diluted with water, and its casein coagulated by heating it with an acid, the coagulum, (although the density of the milk is diminished by dilution), for the most part, floats near the surface, proving that in the other case its suspension in the serum is owing to the viscidity of the latter.

If human milk be left to itself for several days, a certain amount of coagulation takes place; some flaky coagula mix with the cream, and float near the surface, while others sink to the bottom.

Berzelius states that caseous matter gives, with a small quantity of acid, a combination soluble in water; and that with a larger quantity of acid it affords a combination but little soluble in water(a). This statement appears by the foregoing experiments to be quite correct in reference to the action of nitric and hydrochloric acids on human casein; yet the same authority states, as I have already mentioned, that the casein of human milk forms soluble compounds with acids, in consequence of which it cannot be coagulated by these reagents(b). By acting on cow's milk diluted with water, with a very small quantity of hydrochloric acid, and filtering, I easily obtained a solution in which the presence of casein was demonstrable by adding ferrocyanide of potassium. I did not succeed in

(a) *Traité de Chimie,* vol. vii. p. 600.   (b) Page 625.

forming a soluble compound of the casein of cow's milk with nitric acid. With acetic acid, added in small proportions, the casein of both cow's and human milk forms an insoluble compound which is, however, dissolved by an excess of the reagent.

It would then appear from the above experiments that the great difference between human and cow's milk, in reference to their coagulability, consists in this: that the range of soluble compounds formed by the casein of the former with acids is much more extensive than that of those formed by the casein of the latter.

It is well known that the coagulation of its casein is the first change which milk undergoes in the process of digestion(*a*); it is, therefore, not surprising that an acid which, when present even in very minute proportion, possesses this power, should be found as an element of the gastric juice; accordingly, the presence of acetic, as well as of hydrochloric acid, has been demonstrated in this fluid.

Dr. Clarke, as we have already seen, failed to coagulate human milk with the stomach of a child which was deprived of life *during* birth. With the stomachs of two children which perished in a similar manner, one from prolapse of the funis, the other by craniotomy, I could obtain no satisfactory coagulation; with the stomach of a child, however, which had lived some time, a decided coagulation was effected. No firm coagulum was formed, nor was the effect immediately perceptible, but after standing for a few hours the milk was seen to be full of minute flaky coagula, resembling minute acicular crystals(*b*);

(*a*) See West's Lectures on the Diseases of Infancy, &c., London, 1848, p. 338.

(*b*) In this case, and in that of the fœtus which perished by prolapse of the funis, I did not use the ferrocyanide of potassium test. Of the stomach of the fœtus, which perished by craniotomy, an infusion was made (No. I.). An infusion was at the same time made of the stomach of a child which had lived for some time (No. II.). Some of the infusion (No. I.) was added to

this effect was more decidedly produced on human than on cow's milk. Simon states(a), that "the mucous membrane of an infant a few days old, that has recently died, seems to coagulate woman's milk more perfectly than the mucous membrane of the stomach of the calf." Can it be that the stomach of the newly-born infant does not acquire a coagulating power until it has been subjected for some time to the stimulus of food? The milk secreted during the first hours of lactation is, as we shall presently see, coagulable by heat alone, which might be a provision to meet the weak coagulating power of the digestive organs.

In the experiments which I made with the stomachs of infants, they were placed each in a porcelain capsule, covered with distilled water, and placed in a water-bath, the heat of which was not allowed to rise above 120°. After the infusion had stood sufficiently long, a portion of it was added to the milk to be operated on, and the mixture in like manner was prevented acquiring a higher temperature than 120°. This precaution was taken to prevent the coagulation of the infusion, which was always highly albuminous.

human milk, the mixture placed in a water bath, and allowed to remain for a time at a temperature of 120° F.; it was then filtered; some coagulum remained on the filter; the filtered solution was slightly acidulated with acetic acid, and ferrocyanide of potassium was added; a precipitate was immediately produced. This experiment was repeated with the infusion (No. II.); the addition of the ferrocyanide produced no effect. It is evident that the coagulating power of No. II. was much stronger than that of No. I. Each was then tried with ass's milk, no coagulum remained on the filter, and the filtered solutions gave copious precipitates with the ferrocyanide. With cow's milk No. I. left a slight coagulum on the filter; the milk passed through but little altered, and, being acidulated as above, gave a copious precipitate with the ferrocyanide. The liquid filtered from the cow's milk treated with infusion No. II. was much clearer than the last, and gave a precipitate not nearly so copious. The only case, then, in which the coagulation seems to have been perfect, was that in which human milk was treated with infusion No. II.

(a) Animal Chemistry, vol. ii. p. 51.

Coagulability by Rennet.—Berzelius(a) observes, that the casein of woman's milk is with difficulty coagulated by the stomach of a calf, in consequence of the free alkali it contains; but that when the latter is saturated by an acid it coagulates as readily as that of cow's milk. I mixed a portion of human milk with rennet, and applied heat; no coagulation took place: on filtering the mixture, and adding a solution of ferrocyanide of potassium, a copious precipitate was obtained. Another portion of the same milk was treated in a similar manner, having been previously rendered slightly acid; it was coagulated, and by filtration afforded a clear liquor, which was not affected by the ferrocyanide of potassium. The possibility of one experimenter having operated on a specimen of milk which had become spontaneously acid, while another used one which retained its natural alkalinity, will hence account for the discordant opinions given on this subject.

Human milk is whitish, with a slight tinge of blue, considerably thinner than cow's milk. It is always alkaline; when boiled it becomes, like every other kind of milk, covered with a film of coagulated casein. (Simon). According to Scherer, if the serum of blood be diluted with water, and gently heated, or, still better, if it be mixed with alkali, before being heated, a pellicle similar to that on milk is formed, and the rest of the fluid is not coagulated. In both cases the formation of this pellicle is owing to the oxygen of the air, for it does not take place in an atmosphere of carbonic acid(b).

On examination with the microscope human milk is seen to consist of numerous globules of various sizes, floating in a colourless fluid. This fluid holds in solution casein, sugar of milk, and various salts. With regard to the nature of the globules different opinions have been entertained. Some, as M. Raspail(c), have

(a) *Lehrbuch der Chemie,* 9ter Band, Dresden und Leipzig, 1840, p. 699.

(b) Wagner's *Handwörterbuch der Physiologie,* u. s. w., Braunschweig, 1845, vol. ii. p. 453.

(c) *Nouveau Systeme de Chimie Organique,* Paris, 1838, t. iii. p. 136.

supposed that some of them are oleaginous, others albuminous. Donnè, on the other hand, argues that since the globules entirely disappear when agitated with ether, they must all belong to the fatty element of the milk(*a*).   Simon considered them to be fat vesicles, having an envelope of coagulated casein(*b*).

Human milk rapidly throws up an abundant cream; this is sometimes accidentally diminished.   In a patient of Dr. M'Clintock's, whose milk I examined on the second day of menstruation, and in the seventh month of lactation, and in whom the menses had regularly returned since the fourth month of nursing, I found the cream very deficient. This was the only peculiarity I could discover in the milk.   Some days after the catamenial flow had ceased I examined the milk again, and found that it threw up twice as much cream as it had done during the continuance of the menstrual period. M. Raciborski, from an examination of the milks of seven nurses, taken during menstruation, concludes that the only peculiarity which milk drawn at such a time seems to present is, that it is less rich in cream than during the intervals between the flux. He also was of opinion that the supposed inconvenience of the milk during menstruation has been much exaggerated, and that a nurse ought never in any case to be rejected simply because she continues to menstruate(*c*).

This opinion, is, however, certainly not correct, as children always suffer an amount of inconvenience when the nurse menstruates, which, repeated at the end of every month, would produce a decidedly injurious effect upon them. In these cases all children suffer more or less from sickness of stomach, disordered state of the bowels, and in some cases even convulsions have occurred, though it may be admitted that when the menstrual period is over, the milk no longer appears to disagree with

(*a*) *Cours de Microscopie*, Paris, 1844, p. 356.

(*b*) Animal Chemistry, vol. ii. p. 42.

(*c*) Quoted in Edinburgh Medical and Surgical Journal, vol. lxi. p. 228, from *Journal de Pharmacie*, Aug. 1843.

the child. It is also found to produce an injurious effect upon the mother if she continues to nurse after the catamenia return, and if her general health is impaired it must obviously react upon the child. For these as well as other reasons, most practitioners in midwifery agree in considering that a nurse who menstruates ought to be rejected. And it is for this reason, and not for want of experience, that an objection is made to women with their first children, or who nurse for the first time, as with them menstruation generally returns after a few months.

The specific gravity of human milk is very variously stated in different works: Berzelius says it ranges from 1·020 to 1·025, and sometimes a little higher(*a*); Raspail quotes it at the same, stating, however, that it will vary with climate and other circumstances(*b*); Simon states it at from 1·030 to 1·034, and gives as the average 1·032; Brisson makes it so low as 1·0203(*c*). Of twenty specimens of healthy milk, of which I took the specific gravity, the highest was 1·033, the lowest 1·025, the average 1·0299. The specific gravity will, of course, vary with the amount of secretion and the period of lactation.

The *colostrum*, or the first milk secreted after the commencement of lactation, differs remarkably from ordinary milk; it is thick, of a yellow, yellowish, or dirty whitish yellow colour. On standing, a viscid deposit forms at the bottom, while a thick, yellow cream mounts to the surface of the fluid; it is alkaline; exhibits under the microscope some true milk-globules, generally irregular and badly formed, some of them resembling large drops of oil; it also contains a number of very small globules, presenting throughout the fluid a pulverulent appearance; many of the globules exist in agglomerated masses: in addition we perceive the granular bodies described by Donnè(*d*); this author states, that on dissolving the fatty parts of

(*a*) *Lehrbuch der Chemie,* 9ter Band, p. 697.
(*b*) *Op. cit.* t. iii. p. 157.   (*c*) Rees' Cyclopædia, art. Milk.
(*d*) *Op. cit.* p. 400; see also Dr. Peddie's paper.

the colostrum by ether, mucous globules(*a*) are seen to exist in
it. Accordingly we find that caustic potash converts colostrum
into a gelatinous mass.

The colostrum differs remarkably from ordinary milk in
being coagulable by heat; it will often become, on the appli-
cation of heat, solid like white of egg; it also affords an imme-
diate coagulation when mixed with nitric or hydrochloric acid
without heat. On adding acetic acid to a portion of colostrum
it appeared at first to be very slightly coagulated, but on exa-
mining it at the end of some hours it was found to have solidi-
fied. This state of extreme coagulability lasts for a very short
time; I have found it to have disappeared before the end of the
first day of lactation.

Colostrum is much richer in solid constituents than ordi-
nary milk, especially in butter and sugar; the casein and salts
are also increased. Simon attributes the well-known aperient
property of the colostrum to the increased quantity of salts and
sugar of milk(*b*).

It was seldom I could obtain colostrum in sufficient quan-
tity to take its specific gravity; of eight specimens, the highest
was 1.034, the lowest 1.028, the average 1.0316.

To Dr. Sibthorpe, assistant physician at the Dublin Lying-
in Hospital, I am indebted for all the specimens of colostrum,
and for many of those of ordinary milk, which I have examined.
Without the zealous co-operation which he so kindly afforded
me, I should have been unable to carry on the present inves-
tigation.

Although I stated that I should not in this paper enter into
a consideration of the changes produced in the milk by disease
or other circumstances, the following case so nearly simulates
one with the colostric secretion that I shall briefly mention it
here; it was furnished to me by my friend Dr. Sibthorpe. In

(*a*) *Cours de Microscopie*, p. 401 ; Donnè supposed the granular bodies to
be composed of fatty matter and of this peculiar mucus.

(*b*) Animal Chemistry, vol. ii. p. 50.

two respects only does it appear to differ from colostrum, viz., in its specific gravity and taste. It was the milk of a woman who had been nursing for the almost incredible period of two years and nine months. She was, as might be expected, dyspeptic, and was menstruating when the milk was taken. It was of a dirty white colour, alkaline, threw up a considerable cream; specific gravity 1.024; taste saltish; was converted into curds and whey by the application of heat; and exhibited under the microscope numerous colostric bodies, and agglomerated globules.

The milk of the cow and goat form dense coagula with acids, and throw up an abundant cream. That of the ass, on the contrary, has, like the milk of woman, a more extended range of soluble combinations with acids; and its coagulation, while it takes place much more easily than that of human milk, resembles it strongly in consistence, being soft and flaky; hence its adaptation to the infant and valetudinarian stomach. In tenuity, also, it bears a close resemblance to woman's milk, and, in consequence of this property, its coagulum, for the most part, floats near the surface(*a*).

In the proportion of saccharine matter also, which it contains, it approaches more nearly to woman's than do the other milks I have mentioned. In one important particular, how-

(*a*) Ass's milk contains much less casein than human milk, hence it ought, if the casein of both be of the same nature, to be coagulable by a less proportion of acid; that is, a given quantity ought to require less acid to form with its casein an insoluble compound; and such we find to be the case. The milks of the cow and goat, on the contrary, contain a considerably larger proportion of casein than woman's milk does; and, consequently, if the chemical relations of their casein were similar, they should require much more acid for their coagulation, but they coagulate with infinitely less. We have also seen that the effect of acids, when employed without heat, is different on these two classes, if I may so speak, of milks. For these reasons I am inclined to think that some difference might be found in the ultimate composition of the casein of human and ass's milk on the one hand, and of that of cow's and goat's milk on the other. I am not aware that any, except the casein obtained from cow's milk, has been subjected to analysis. The one

ever, it differs from human milk,—it is very deficient in cream. For this reason I should be inclined to recommend that, when ass's milk is administered as nourishment to infants, it should be mixed with a twentieth part of cow's cream. The necessity of an oily element in the food of man is well known, and this is certainly very deficient in ass's milk. By this addition the milk is rendered much more palatable.

The importance of administering oily matter in many diseases is now very generally recognised. Dr. Bennett believes " that the therapeutic action of cod-liver oil is essentially dependent on its fatty nature. To him it seems certain, that in tubercular diseases (and in chronic rheumatism) the albuminous compounds are in excess, and the oily compounds diminished in the economy. The direct addition of the latter, therefore, is the most rational method of supplying the wants of the system"(*a*). If these views be correct, the addition I ventured to suggest would, I should think, be found in many cases an improvement, especially as ass's milk is so often ordered in the class of diseases (tubercular) to which Dr. Bennett alludes.

It was probably the circumstance of its containing an

class of milk appears to afford a less azotized nutriment, but to be well adapted to weak digestive powers, while the other contains a much more solid aliment, requiring a comparatively strong digestion.

The following analyses are taken from Simon's Animal Chemistry:—

Constituents of Milk.	Woman's Milk. Simon.—Average of fourteen Analyses.	Ass. Peligot.—Mean of several Analyses.	Cow. Simon.	Goat. Clemm.
Water, ...	883·6	904·7	857·0	865·175
Butter, ...	25·3	12·9	40·0	42·507
Casein, ...	34·3	19·5	72·0	60·321
Sugar of milk and extractive matters,	48·2	62·9	28.0	44·065
Fixed salts, . .	2·3	. . . .	6·2	

The butter in woman's milk in the above table is lower than that given in most other analyses. Simon gives 54·0 as the maximum.

(*a*) Braithwaite's Retrospect, vol. xvii. p. 365.

abundance of cream or fatty matter which induced Helvetius to recommend goat's milk in preference to ass's, and as " particularly proper to restore children in consumptions, as well as other extremely thin and emaciated bodies." This quotation of Helvetius I take from Dr. Rutty, who has appended the following explanation and qualification, viz.: " as being more nourishing and less stimulating, though how far the circumstance of its being harder of digestion may determine its usefulness in particular cases, must be left to observation"(*a*).

The objection thus raised by Dr. Rutty is met, I conceive, by the proposal to combine the nourishing oily portion of cow's milk (which, I believe, when properly diluted, is not the least digestible portion of the milk), with a milk which, from its easy digestibility, is admirably adapted to the invalid stomach.

Donnè recommends the use of cow's milk from which the fatty matter has been almost entirely separated by filtration, as a light aliment, easy of digestion, sufficiently nourishing, and having no laxative property. Such milk, he says, might be useful to children inclined to diarrhœa, to whom we might wish to give a light nourishment(*b*). The filtration is accomplished by means of filters of good paper, and the filtered liquid is not to be collected until it begins to pass perfectly transparent or very lightly opaline. There appears to me to be at least one capital objection to this proposal, which is, that by Donnè's own testimony, at least twelve hours are required for the filtration of half a pint. I need not say that the milk will not, by so long exposure to the air, become better adapted for administration in a case of diarrhœa, and it appears to me, that such a milk as M. Donnè would recommend is prepared by nature in the mammary gland of the ass.

Dr. Sibthorpe has taken the trouble to draw up for me

(*a*) The Analysis of Milk, appended to " The Argument of Sulphur or no Sulphur in Waters discussed." By John Rutty, M. D. Dublin, 1762; p. 15.

(*b*) *Cours de Microscopie*, p. 460.

some interesting tables relative to the periods at which lactation commences, which want of space obliges me reluctantly to omit. Of fourteen cases mentioned in these tables, one had a flow of milk three days before delivery, and two had milk at the time of delivery. In the remaining eleven cases lactation commenced as follows:—one at one hour, one at eight hours, two at eight hours and a half, one at ten, one at fourteen, one at eighteen and a half, one at twenty, one at thirty-three, one at thirty-seven, and another at thirty-eight hours after the birth of the child.

The analogy between the milk and the blood is most striking. The latter fluid, requiring so many and complicated processes for its elaboration, is presented to the newly born, whose powers would be quite unequal to the task, as it were, already prepared.

ART. VII.—*Observations on the late Epidemic Dysentery in Dublin.* By R. MAYNE, M. D., Physician to the South Dublin Union Workhouse, and Lecturer on Anatomy and Physiology at the Richmond Hospital School of Medicine.

A CONSIDERABLE period has now elapsed since the late epidemic of dysentery appeared in Dublin, and as my connexion with the South Dublin Union Workhouse afforded me vast opportunities for studying the disease, I have determined to submit the result of my observations to the profession.

From time to time, whatever cases possessed any interest were carefully noted, and the records thus obtained have furnished the materials for the following pages.

The better to show the progess of the epidemic, I have arranged in a tabular form the numbers of new cases in the workhouse each month, from April, 1846, to August, 1848, inclusive; those which arose within the workhouse are distinguished from those sick on admission; the monthly mortality is added; and a brief summary of the ages of all is appended.

In drawing up this abstract I have confined myself to the male department of the workhouse; but at the female side, which was chiefly under the management of my colleague, Mr. Shannon, the disease prevailed with equal severity.

TABLE *showing the Numbers of male Patients labouring under Dysentery on their Admission into the South Dublin Union Workhouse; also the Numbers attacked in the Workhouse, and the Mortality for each Month, from April, 1846, to August, 1848, inclusive.*

1846.	New Cases sick on Admission.	New Cases arising in the Workhouse.	Total Number of New Cases.	Deaths.
April, ...	4	53	57	2
May, ...	5	28	33	4
June, ...	3	12	15	0
July, ...	4	27	31	1
August, ...	3	26	29	0
September, ...	2	23	25	3
October, ...	6	46	52	7
November, ...	4	47	51	11
December, ...	7	29	36	20
1847.				
January, ...	13	34	47	10
February, ...	12	23	35	15
March, ...	8	46	54	19
April, ...	11	38	49	20
May, ...	26	39	65	27
June, ...	11	34	45	17
July, ...	17	48	65	20
August, ...	16	59	75	20
September, ...	26	40	66	29
October, ...	16	29	45	22
November, ...	19	50	69	21
December, ...	9	34	43	29
1848.				
January, ...	10	40	50	21
February, ...	12	39	51	13
March, ...	8	35	43	16
April, ...	5	28	33	13
May, ...	7	11	18	11
June, ...	5	9	14	10
July, ...	3	8	11	6
August, ...	3	12	15	6
	275	947	1222	393

x 2

Table *showing the Ages of the male Patients affected with Dysentery, also the Ages of the male Patients who died, and of those who recovered from Dysentery, in the South Dublin Union Workhouse, from April,* 1846, *to August,* 1848, *inclusive.*

	Numbers Attacked.	Number of Deaths.	Number Recovered.	Remaining under Treatment.
Under 10 years of age, . .	127	74	51	2
From 10 to 20 years of age,	104	19	85	0
From 20 to 30 do. do.,	65	13	51	1
From 30 to 40 do. do.,	112	22	90	0
From 40 to 50 do. do.,	134	27	106	1
From 50 to 60 do. do.,	216	59	156	1
From 60 to 70 do. do.,	259	94	164	1
From 70 to 80 do. do.,	161	70	90	1
From 80 to 90 do. do.,	44	15	29	0

According to these tables, the disease proved fatal to nearly one-third of those attacked; but the mortality will scarcely appear surprising when all the concomitant circumstances are duly considered. 179 deaths, or nearly one-half the fatal cases, occurred in persons from sixty to ninety years of age, a time of life at which the chances of recovery from any acute disorder are necessarily small; whilst 275 of the patients submitted to treatment were labouring under dysentery on their admission into the workhouse, and of these very many were from the first in a hopeless condition.

Various circumstances contributed to produce the great mortality amongst this latter class of persons; the majority of them were broken down by previous destitution, and unwholesome or insufficient food; and in almost every instance the acute stages of the disease had passed over either totally neglected or without efficient treatment, until, in the chronic form, the complaint had become absolutely incurable.

An excessive mortality appears in the class under ten years of age; but in a large proportion of them, the disease occurred as a complication, or rather as a sequela of measles, which at that time prevailed in the workhouse. The hybrid malady thus

generated proved peculiarly malignant, running its course with surprising rapidity; and so general was the epidemic influence that the ordinary chest complications of Rubeola were seldom observed, whilst dysenteric attacks were almost universal.

In estimating the severity of this epidemic at different periods the reader should bear in mind that a comparison of the mortality with the number of new cases in each month, if relied upon exclusively, might lead to conclusions not exactly accurate. By this method of calculation, for example, the proportion of deaths to new cases appears greater in the months of May, June, July, and August, 1848, than at any previous period, whereas the complaint was then actually upon the decline, its fatality having vastly diminished, and the numbers attacked being greatly lessened. In explanation it may be stated that very few died of the disease in its acute stages; when fatal it gradually merged into the chronic form, and thus oftentimes many months intervened between the first seizure and the fatal termination.

In the late epidemic two forms of dysentery requiring separate consideration were observed at the South Dublin Union workhouse. In the acute variety the disease seemed to follow a pretty uniform course, yielding readily *at the commencement* to active treatment, but gradually merging into the chronic form, or terminating fatally when the early symptoms were neglected or mismanaged; whilst the chronic dysentery appeared as a complicated malady, frequently involving distant organs in its progress, remarkably difficult of cure, and ending for the most part fatally, after a painful and protracted struggle.

ACUTE DYSENTERY.—ITS PATHOLOGY.

In all the *post mortem* examinations of those who died within three weeks from the commencement of the disorder, the large intestine was found the principal seat of the organic mischief, and in the majority of such cases it was the only

part engaged.   The morbid appearances generally extended
from one end to the other of this portion of the intestinal tract;
but it may be stated as a general rule, to which I do not recol-
lect a single exception, that the lower parts of the canal were
those most intensely affected, and that the structural changes
became gradually less and less apparent as they were traced
upwards towards the cæcum. An undue degree of vascularity
of the peritonæum covering the diseased portions of the canal
was generally observed, and the absorbent glands along the
large intestine usually attracted attention from their extreme
congestion; these bodies, which are of a pale colour and in-
significant size when healthy, were, in almost every instance,
enlarged, and of a dark claret hue.   The walls of the diseased
intestine were always enormously thickened and indurated;
grasped between the fingers the part felt semi-cartilaginous,
and to the scissors it offered an undue degree of resistance,
cutting like brawn.   The cavity of the intestine was found
almost invariably contracted. In no instance were scybala pre-
sent, and rarely were any traces of true fæces discovered, he
contents of the lower bowels being similar to the matters last
evacuated during life.

The mucous coat presented the most remarkable altera-
tions in structure; in colour it exhibited every variety of shade,
from the most intense vermilion to dark green and purple; in
the rectum the green or purple hue of gangrene often predo-
minated, but in the upper portions of the colon and in the
cæcum a more florid vascularity for the most part prevailed.

In certain cases, which had run a very rapid course, the en-
tire free surface of the mucous membrane, from the cæcum to
the anus, was covered with a thick branny exudation, of an
olive or dark brown colour, and presenting a striking resem-
blance to the cutaneous disease icthyosis, or the material called
shagreen; by scraping this with the blade of a scalpel it was
easy to detach it from the subjacent membrane, which then
appeared red, tender, and superficially ulcerated.

In other instances, where the disease proved less rapidly fatal, the mucous membrane exhibited various forms of ulceration; sometimes the ulcers were solitary, with indurated bases and elevated irregular margins, not unlike the Hunterian chancre; these were always most numerous in the rectum and sigmoid flexure of the colon, and became fewer and fewer as the cæcum was approached; sometimes the mucous membrane over a great extent of surface appeared raw and velvety, with varying shades of vascularity, and, on close examination, it was found superficially ulcerated; whilst in a third variety the ulcers were large, irregular, ragged, and had deeply eroded the walls of the gut. In a vast number of cases these ulcers had penetrated fairly to the serous coat, but in no instance did perforation actually occur.

In the acute dysentery the small intestine was usually found healthy, the ileo-cæcal valve forming a line of demarcation to the disease ; but in a few instances the ileum and the jejunum were both implicated, the mucous membrane of those intestines being excessively congested, although never actually ulcerated. Here also, just as in the large intestine, the disease seemed to decrease gradually from below upwards.

The liver was sometimes extremely congested, and poured out dark venous blood in excessive quantities when incised; but this condition of the liver was certainly not essential to the disease, for it was very frequently absent. The gall-bladder was always moderately distended with thin orange-coloured bile. The spleen and pancreas, the thoracic viscera, and the brain, were ordinarily healthy.

It is unnecessary to detail the symptoms of acute dysentery as they are too well known to require more than a passing notice, and during the late epidemic they presented nothing peculiar.

Fever was always present, but it resembled the constitutional disturbance produced by a severe local disease, rather than any of the ordinary forms of continued fever. The dis-

ease, in almost every instance, commenced by a bowel attack, *not preceded* by fever, and the pyrexial symptoms which followed increased or diminished in proportion to the success or the failure of the remedies exhibited to subdue the local inflammation; in a word, the accompanying fever appeared to be the constitutional expression of local suffering, and not the more complex derangement of the system entitled continued fever.

In making this statement I do not mean to assert that during the recent visitations dysentery and typhus never coexisted; in a certain number of cases dysentery occurred as a sequela of fever, and in a few it seemed to arise during the progress of fever; but there was no necessary connexion between the two diseases, and when they happened to attack the same individual, the complication appeared to be purely accidental.

The dejections presented very different appearances in different cases: in some they consisted almost exclusively of shreddy mucus intermixed with blood, and without a trace of fæcal matters; in others the sanguineous discharge seemed to predominate, large quantities of fluid blood passing in every stool; in a third class of patients a tremulous, gelatinous-looking substance, ropy, tenacious, and tinged with blood, formed the greater part of the evacuations, and, like the secretion from the bladder in chronic cystitis, it also frequently adhered to the bottom of the vessel; in a fourth, a greenish semi-fluid material, like spinach, appeared the principal ingredient; whilst in a very large proportion the stools, from the very commencement, exhibited neither blood, lymph, nor mucus, but assumed at once the ochry appearance so common in chronic dysentery.

The treatment which proved most successful may be summed up in a few words: dissection showed that the disease consisted essentially in a severe inflammation of the large intestine, tending rapidly to ulceration, and sometimes even pro-

ducing the death of the structures implicated; and, true to its pathology, it usually yielded to mercury and other antiphlogistic measures, *when this line of treatment was employed sufficiently early.*

Venesection was practised with the best results whenever the patient was young and vigorous, and came under treatment in good time; but in a vast majority of the workhouse cases *local* detraction of blood was the only mode of depletion practicable: this was best effected by leeching the verge of the anus repeatedly, greater relief being obtained from twelve leeches so applied than from triple the number placed upon the abdomen; the hemorrhoidal veins were in this manner most effectually unloaded, and at the same time the distressing tormina and tenesmus were with great certainty mitigated.

Mercury, however, must be considered the principal remedy. At this conclusion both my colleague, Mr. Shannon, and myself, had arrived early in the epidemic, and in it we were confirmed by the subsequent experience of the assistant physicians, Dr. Kennedy and Dr. Richardson. I was at first much prejudiced against the use of calomel, from recollecting the severe mucous irritations which it so constantly produces when administered for other diseases, and knowing that its efficacy in controlling mucous inflammations in general is trifling compared with its curative powers in analogous affections of serous membranes or of parenchymatous organs. The weight of Dr. Cheyne's authority also tended in no small degree to create in my mind a distrust of the mercurial treatment; it was not, therefore, until repeated trials convinced me of its value, and of the total insufficiency of every other means, that I became a perfect convert to the practice; but the admirable essay of the late Dr. O'Brien, of Dublin; Dr. Latham's highly practical treatise on the disease which prevailed at the Milbank Penitentiary; Dr. Ferguson's Memoir on the Mercurial Plan of treating Dysentery(*a*); and, more recently, Dr.

(*a*) Med. Chir. Trans., vol. ii.

Lalor's paper on dysentery, in a late Number of this Journal; and Baly's Gulstonian Lectures on the same subject, all advocate the use of mercury, and sufficiently attest its powers.

Mercury, *when exhibited early*, usually controls this disease with as much certainty as it cures peritonitis, or any other acute inflammation for which modern physicians prescribe it; but, to be successful, it must be administered before serious organic mischief has been produced. As in other acute inflammations, the good effects of the mercurial treatment are sometimes first perceived simultaneously with its action upon the gums, but very constantly it produces a cure before any symptoms of salivation arise; so that a daily inspection of the evacuations alone enables the physician to determine when the remedy ought to be discontinued.

The beneficial influence of the mercury is first recognised by the appearance of true fæcal matter in quantity in the stools, accompanied by marked relief to the general uneasiness, and a decided decrease of the dysenteric discharges. As soon as the natural secretions are fairly restored, the mercurial treatment may be safely laid aside, irrespective of the condition of the mouth.

In some very rare instances salivation was induced by calomel without causing any immediate improvement in the evacuations, or materially alleviating the patient's sufferings; a gradual amendment, however, generally ensued in such cases, and I feel convinced that when the gums are once fairly affected by calomel its further exhibition does no good in dysentery.

In a certain proportion of the patients calomel appeared neither to improve the dysenteric discharges, nor yet to affect the mouth. Such cases invariably proved refractory, and very often ran on to a fatal termination.

The extravagant praises bestowed on large doses of calomel by Annesley, and other army surgeons who had practised in India, induced me, in some very acute cases, to exhibit it in

doses of one scruple at bed-time, for two or three successive nights. In this quantity it unquestionably exerts a most powerful influence on the entire mucous tract, affording at once marked relief to the most urgent symptoms, and often producing healthy dejections after a single dose; but I do not recollect that in any instance the final recovery of the patient was accelerated by this plan. Smaller doses effect equally certain cures without the same risk of excessive salivation. Two grains of calomel, with three of Dover's Powder, every fourth hour, usually succeed, even in the most acute varieties of the disease ; and much smaller quantities, or even hydrarg. cum cretâ, or blue pill, have been sufficient in many cases where the age or the delicacy of the patient seemed to forbid more active treatment.

Mercury by inunction was tried with very uncertain results; an erroneous impression that calomel would irritate the inflamed mucous surfaces first led me to this practice. In some cases salivation was produced by mercurial rubbings, without curing the dysenteric symptoms; and in all the recovery was less expeditious and less certain than when calomel was used.

In addition to the above active measures, great benefit may be derived from local applications to the abdomen ; warm fomentations and poultices often exert a most soothing influence. The bran poultice, from which such excellent results are obtained in midwifery practice, will be found not less efficacious in dysentery. A very convenient mode of applying this remedy is to place a sufficient quantity of scalded bran in a large flannel bag, this retains the heat and moisture for a considerable length of time, and admits of very ready application and removal; it often forces the skin into general perspiration, relieving singularly the deep-seated uneasiness, and producing all the benefits of a warm bath without any of its inconvenience.

Next to mercury, alkaline medicines appeared to exert the most beneficial influence in acute dysentery. Unaided by

mercury, their power to control the disease is but feeble, nor ought they ever to be depended upon, as a substitute for mercury, when the complaint is recent and the patient's constitution healthy; but when the evacuations have assumed a healthy colour, under the influence of mercury, the stools still continuing too frequent and too fluid; or when mercury has fairly affected the mouth, without improving the stools, or materially alleviating the distress; or when the constitution is too feeble, or the dysentery too chronic, to afford a reasonable expectation of success from the employment of mercury, the most remarkable benefit is sometimes obtained from this class of remedies. Liquor potassæ in full doses, combined with small doses of some fluid preparation of opium, and frequently repeated, as recommended by Mr. Kelly of Mullingar(*a*), produces a most soothing effect, under the circumstances above stated; but lime water will also frequently hit when the ordinary cretacious or astringent mixtures would to a certainty increase the irritation.

Of various other remedies reputed useful in acute dysentery, fair trials were made, and with but little success.

Astringents, whether belonging to the vegetable or to the mineral kingdoms, are unsuited to the acute stages of dysentery, never failing to increase the mischief; and even in the chronic forms of the disease they are of doubtful efficacy.

Bitartrate of potass in large doses was unsuccessful. The commendations bestowed upon it by Cheyne were sufficient to insure it a favourable reception, but candour compels me to acknowledge that in my hands it proved a signal failure. Several patients were prevailed on to take this medicine in half-ounce doses, but even in this quantity I could not perceive that it " promoted the biliary secretion," a property attributed to it by the above distinguished author; nor can I call to mind more than one solitary cure under its use, and in that case the

(*a*) Dub. Quar. Journal for Feb., 1848.

salt evidently ran to the kidneys, producing a very abundant diuresis.

Opium in full doses most certainly aggravated the disease—increasing the fever, drying the tongue, suspending the secretions of the skin, and not controlling the inflammation; in smaller quantities, particularly in the form of Dover's Powder, and in combination with mercury, it mitigated the patient's sufferings, without exerting any injurious influence, and, therefore, with these restrictions, it was usually prescribed; but in no shape or form should opium be relied upon exclusively as a cure for dysentery.

Purgatives were rarely beneficial, and in many instances where this class of remedies was exhibited unpleasant consequences resulted, the disease having been decidedly aggravated by their use. The failure of purgatives to relieve the disease may be explained by the extremely rare occurrence of scybala. On this point my experience entirely coincides with that of Dr. Cheyne, for in none of the *post mortem* examinations were any traces of fæcal lodgments detected, and the stools seldom contained solid masses until the complaint was well nigh subdued.

There is, however, a stage of acute dysentery wherein laxatives render the greatest service, I allude to a period when the active inflammatory symptoms have yielded to treatment, and the patient seems to be progressing towards convalescence, whilst the lower part alone of the large intestine still remains unhealthy. That the upper portions of the large intestine are the first to recover, and that the rectum is the very last part to improve, may be fairly inferred from the appearances on dissection already detailed, and still more from the distressing tenesmus, accompanied by a copious discharge of glairy mucus, which often persists for a length of time, even after the fæces have become figured.

These are the cases in which the most decided tendency to scybala prevails, whether it be that the secretions of the cæcum

and colon are as yet defective, and, therefore, unfitted to form
fæces of healthy consistence, or that the rectum still continues
in a swollen condition, which retards the fæcal mass, and thus
favours constipation.

Large doses of olive oil and mucilage sometimes afford re-
lief under these circumstances; but draughts containing one
drachm of castor oil in combination with twenty drops of spirits
of turpentine, repeated at intervals of three or four hours, until
the bowels are unloaded, are more effectual.   The diseased
portion of the tract is also within reach of local remedies, and,
conflicting though the practice may appear, yet the exhibition
of laxatives by the mouth, and the occasional use of astringent
injections *per anum*, constitute a most successful combination of
remedies in cases such as are here described.   As an astringent
injection, acetate of lead in solution fulfils every indication.

A tendency to constipation often remains, even after the
cure is complete, and thus a strict attention to the bowels may
be required for months, as a relapse is, at any time, very likely
to be induced by the irritation of indurated fæces.

The turpentines, including balsam of copaiba, have rather
disappointed me.   In acute dysentery their powers to control
the disease, or even to diminish the sanguineous discharges,
are very questionable, nor should they, in the early stages,
ever be preferred to mercury; but it sometimes happens that,
after apparent recovery under the use of mercury, the patient
relapses within a short period, the sanguineous discharges re-
appearing.   Mercury usually fails to cure the relapse with the
same certainty that it controls the primary affection, and in
such cases turpentine proves a most powerful remedy, its effi-
cacy being analogous to what we know of its effects in iritis.

No prudent practitioner would employ turpentine in pre-
ference to mercury when the iritis is acute and the patient's
constitution healthy, but when mercury has failed to cure iritis,
or when a relapse occurs whilst the patient's system is as yet
saturated with mercury, then turpentine often effects a cure,

and in dysentery it will frequently succeed under precisely similar circumstances.

The virtues which many writers on dysentery have attributed to ipecacuanha I have been unable to observe, as this medicine has been, in my practice, perfectly ineffectual.

COMPLICATIONS OF ACUTE DYSENTERY.

It has been already stated that the late epidemic dysentery appeared to be essentially distinct from typhus fever; nevertheless, in a certain number of cases, the two diseases occurred in the same individuals, so that some notice of this complication becomes necessary.

I do not recollect to have observed any instances in which patients labouring under dysentery contracted, during its progress, either true typhus or the epidemic fever. Fever these patients undoubtedly had, but it was the fever of dysentery; it was never accompanied by maculæ, nor did it run the regular course, or exhibit the ordinary complications of true typhus; nor yet did it evince a tendency to subside on particular days, or to relapse with almost unerring certainty, or to terminate by regular crisis, characters which belonged to, and particularly distinguished the late epidemic fever.

In a very few patients dysenteric stools occurred during the progress of the epidemic fever; but of these cases I speak doubtingly, as none of them proved fatal, and without *post mortem* examination I should hesitate to pronounce the *large intestine* to have been the seat of the organic mischief.

Several cases fell under my observation where dysentery arose during convalescence after fever; indeed, I would say that persons recovering from the epidemic fever seemed particularly susceptible of the epidemic dysentery. The usual period of attack was from the fourth to the eighth day of the convalescence.

Those who thus contracted dysentery, as a sequela of fever, laboured under great disadvantages, for with them active de-

pletion was out of the question. Mercury, however, when
cautiously administered, proved eminently successful, even
with this unpromising class of patients.

Pregnant women were not unfrequently the subjects of acute
dysentery, their gestation affording them no immunity from
its attack. Prompt measures were required with these patients,
for the bowel irritation, unless speedily subdued, was certain
to induce premature labour. Many of them bore both deple-
tion and mercury satisfactorily, and obtained perfect relief
from this treatment.

A considerable number of women contracted dysentery
whilst they were nursing. Many of them refused positively
to part with their infants, and continued to suckle them
throughout their illness; and yet the disease was rarely, if
ever, communicated to the infants, under circumstances appa-
rently so favourable for its propagation. When the dysentery
was severe, however, there was usually a complete suppression
of the lacteal secretion, but it often re-appeared as soon as the
complaint was controlled by mercury.

The subject of chronic dysentery will be treated of in a
future Number.

Art. VIII.—*Observations on Enlargement of the Liver and
Spleen, and on Pica, in Children.* By Francis Battersby,
M. B., F. R. C. S. I., Surgeon to the Institution for Dis-
eases of Children, Pitt-street.

[Communicated to the Obstetrical Society.

The following observations have reference to two causes of
abdominal enlargement in children, of which it seems to me
very strange that scarcely any notice is taken in the books
which treat of their diseases.

In Dr. Copland's Dictionary of Medicine, it is stated, that
" disease of the liver very seldom occurs until after puberty,

unless in the children of Europeans residing in the East Indies or other intertropical climates"(*a*). A similar opinion seems to be entertained by Drs. Maunsell and Evanson, as in their esteemed work no mention whatever is made of the subject.

It is true Dr. Cheyne, in 1802, in his essay on the weaning brash, states that, in every instance of it observed by him, "the liver was exceedingly firm, larger than natural, and of a bright red colour, and the enlarged gall-bladder contained a dark green bile;" the weaning brash being, he imagined, imputable to an increased secretion of acid bile, or rather to the morbid state of the liver which occasions that. The children were all affected with purging and vomiting, and they were generally weaned "before the eighth or ninth month." In none of the cases, however which Dr. Cheyne has given, did he, previous to death, even suspect enlargement of the liver; while in all the cases I have noticed of enlarged liver, the enlargement was notorious. Of sixteen cases but three were affected with diarrhœa, one of whom had lientery, and none vomiting. In age they varied from eleven months to six years and nine months, and in the majority of them suckling was too long continued; in three for two years; the average for the entire was fifteen months.

Dr. Burns has given a brief account of hepatitis in infancy and childhood, the counterpart of which I am unable to discover in the cases I have witnessed. He describes elder children, "after a few weeks, as being sensible of a smell like rotten eggs, which they think comes from the stomach; then a little fetid matter is coughed up, which is followed by copious expectoration, or pus is ejected, as if vomited from the stomach"(*b*). Abscess of the liver, according to Dr. Stokes(*c*), is seldom met with in this country in adults. In children, according to my experience, it must be exceedingly rare; I have never seen it.

(*a*) Vol. ii. p. 618.

(*b*) Principles of Midwifery, including Diseases of Women and Children, p. 798. Sixth edition, London, 1824.

(*c*) Cyclop. Pract. Medicine, *Art.* "Liver."

Under the name of hepatitis, MM. Rilliet and Barthez describe an affection approaching nearest to the one I allude to. " It is an affection very rare," they say, " in children." They have observed only six cases of it. " It commences by a slight febrile movement, accompanied by increased thirst and loss of appetite. At the same time, or shortly afterwards, an icteric tint is perceived, limited at first to the conjunctivæ, and slightly pronounced, but soon becoming very marked. The liver then augments in volume, passes the ribs, extends to the epigastrium, and, ascending in the hypochondrium, increases the dulness of that region. The tumour is ordinarily indolent, easily circumscribed when the abdomen is soft and flexible, but is defined with difficulty when it is distended. At the same time that the jaundice and tumefaction of the liver are manifest, the urine becomes changed, and of the colour of beer. The stools were few, liquid, and discoloured. At the end of a variable time, the febrile movement diminishes and disappears; thirst is no longer felt; the appetite is recovered. The tumour of the liver, which has progressively diminished, still continues; it, however, soon disappears. The icteric coloration is in part effaced. The urine recovers its normal colour, and at the end of twenty or thirty days all the morbid symptoms have disappeared"(a).

Rilliet and Barthez state, that this disease is of little severity, inasmuch as five of their cases, which were " primitive," recovered; the sixth, a tuberculous child, died.

The ages of their cases differed from mine, as they had two of four years; two of from five to five and a half years; one of twelve years; and one of fourteen years.

Now, of sixteen cases, whereof I have ascertained the termination of eleven, six died, two of them of scarlatina; four recovered; and one remains under treatment. The sexes are liable to be affected equally; as of the sixteen, the number of males and females was the same. As to age of those I treated,

(a) *Traité des Maladies des Enfans,* t. i. p. 578. Paris, 1843.

one was under one year; four from one to two years; six from two to three years; one from three to four years; one from four to five years; and three from six to seven years.

Two of these cases in which there was morbus cordis, and one scrofulous enlargement of the liver, I shall consider subsequently. In the other thirteen there was in general a slight febrile action, with tenderness on pressure over the liver; in some the stools were uncoloured, and the urine was deeply tinged. In ten, jaundice existed for some time; in five, ascites or anasarca; in one, phthisis; in one, pompholyx; and one was affected with laryngismus stridulus. The children were generally languid, wasted, and had a dirty jaundiced hue of the countenance. The abdomen was much enlarged, its veins were distended, and the liver could be most distinctly felt extending at various degrees of distance from the ribs to the pelvis. In one case only I received intelligence of pain being felt in the right shoulder. Instead of the enlargement of the liver disappearing in twenty or thirty days, I have seen it after a continuance of a year, one year and six months, two years, and even three years and a half.

Case I.—*Hepatitis; Melæna; Death.*—James Donelly, aged six years, admitted under my care to the Institution for Diseases of Children, July 4, 1843; was weaned at one year and four months. He was jaundiced at two and a half years of age, when he first became delicate, and liable to attacks of diarrhœa. Since that time he has also had a great longing to eat cinders, ashes, and dirt. The abdomen has been swelled ever since. The liver is very large, extending into the left hypochondrium, and midway down to the umbilicus. Blue veins in the skin over it, and in the epigastrium, are very evident when he coughs. There is tenderness on pressure. Strong action of the heart. Stools yellow, passed with griping, and streaked with blood for the last few days; the urine is deeply coloured. He is very nervous and trembling. There is a slight bronchitis.

On the 31st July he seemed better; his looks and appetite

were improved, and the liver was less.   After a few days' time
his feet became swollen, his breathing short, yet he is without
increase of the sputa, and he died after having passed, for a
week, lumps of black blood by stool and vomiting.   He was
confined to bed during his last week only.   When out amongst
other boys he always avoided playing with them, lest they
might hurt his belly.

The passing of blood by stool and the mouth is extremely
curious.   This is the only instance I have met of it, and it may,
perhaps, be considered a sort of melæna, such as has been no-
ticed by Lieutand, Bonetus, and Van Swieten, in cases of ob-
struction of the liver proceeding from the exhalation of blood
on the surface of the excretory passages of the bile(*a*).

The following case was the result of the improper treatment
of the child:

Case II.—*Hepatitis; Recovery.*—Christopher Ling, aged two
years, admitted May 3, 1843, was weaned at nine months, and
then given in charge to a drunken and dissipated woman, who
starved the child, and used to give him whisky.   While under
her care, when one year and three months old, he was found
eating his own fæces.   He has still pica, and desires to eat ashes.
Skin pale and yellow, as if suffering from loss of blood.   The
liver is enlarged, with tenderness on pressure.   Stools have been
white for three weeks.   Heart's action normal.   After a little
while he became jaundiced, and remained so two or three weeks.
His feet were swelled, and his belly was big.   He remained for
several months under Dr. Croker's care; his liver did not be-
come natural till the end of the year.   He is now in perfect
health.   Liver not enlarged.

Dr. West has never met with hepatitis.   He has seen cases
of what " he believes to be hypertrophy of the liver.   For the
most part they were associated with very obvious indications
of a scrofulous habit, but on one occasion only was there any
serious disturbance of the general health, the child in that in-

(*a*) *Dict. de Médecine*, t. xiii. p. 238.

stance suffering from very severe diarrhœa, which had succeeded to a state of somewhat obstinate constipation"(*a*). This disease of the liver is described by Dr. Graves as " that state in which there is an increase of size in the organ, with induration and imperfect secretion, but without any remarkable tenderness. This condition in children is accompanied with irritability of the digestive organs, fretfulness, emaciation, loss of sleep, and impaired nutrition. It is only a form of general cachexy connected with the scrofulous diathesis, affecting secretion and nutrition in general, and the digestive and biliary systems in particular"(*b*).

One case, at present under my care, seems to be of this description, and not likely to be benefited by treatment. The girl, aged seven years, has an abdomen two feet five inches in circumference; ascites; liver distinctly to be felt, without any tenderness of it; no anasarca; said to be eight months ill; heart natural; some cough; her appetite is very good; her skin dry; the stools either palish or green. She has never been jaundiced.

I tapped this child on the 27th of February, assisted by Mr. Wilmot, and withdrew a gallon and a half of fluid. Her urine is deficient in quantity, and becomes turbid on cooling, but it again becomes clear on the application of heat, and it does not then coagulate.

I have already mentioned hypertrophy of the liver as having originated in disease of the heart in two children, one of whom,

CASE III.—A boy, aged three years and six months (to all appearance five years), had enormous enlargement of the liver, which descended four inches below the ribs. Posteriorly on both sides, and anteriorly on the left, was a single *bruit de râpe*. The heart's sound was distinct, but rough, at right side of the chest. Natural dulness of heart extended. Epigastric pulsation. Pulse 116, weak, small, and fluttering. Breathing oppressed; face

(*a*) On Diseases of Infancy and Children, p. 442. London, 1848.
(*b*) Clinical Medicine, p. 566. Dublin, 1843.

turgid; lips livid; veins of neck swelled; and the legs œdematous. He had had measles about eight months before, and within the last six months is said to have become affected with his present complaint.

The following case is very extraordinary, and worthy of reflection:

Case IV.—*Pleuritis; Pericarditis; Enlargement of the Liver; Ascites.*—Peter Robinson, aged four years, the child of very respectable parents, came under my care August 13, 1847. He is a very lively and intelligent boy. His illness is said to have originated in his being brought one very cold day across the town, in the half-dressed style of children of the present day. He shivered for two or three hours after returning home. Although a beautiful boy before, he has since never been well; yet he has never been a day in bed, and never complained of his chest. His abdomen was then very full, the liver greatly enlarged, with effusion into the abdomen. His bowels were regular; stools dark coloured; spirits good.

March 13, 1848. Enlargement of the liver, which extends half-way from the ribs to the pelvis. It seems tender to the touch; ascites; stools yellow; eyes slightly tinged yellow; lips bluish; high colour of face.

January 26, 1849. Has been since in Baggot-street and the Richmond Hospitals; was tapped in the latter four months ago, by Mr. Adams, when four quarts of fluid were withdrawn; was salivated afterwards; is now well in flesh; countenance flushed as usual; slight yellowness of conjunctiva; ascites; abdomen two feet three inches in circumference; the liver to be plainly felt, extending half-way down to the umbilicus, and going over to the left side, smooth, with well defined edge. His legs never swell, but he has puffiness around the eyes night and morning; skin soft and perspirable; is very easy in the day, but gets severe fits of coughing at night, when he experiences difficulty in lying down. He has never been jaundiced, except the slight tinge of the eyes; stools have always been brown;

urine always natural; has never had pica; never complained of pain about his liver; there is nothing unusual in the lungs; nothing perceptible about the heart; spirits right good, and he runs about as if nothing ailed him. Has never had any of the diseases of infancy; his pulse is regular.

February 15th. Was in the Richmond Hospital since last report. Left it, and was brought home on yesterday, the lungs being choked with mucus and the lips blue. He died the same evening, retaining his consciousness to the last.

I examined the body about twenty-six hours after death:—coloration of the face; complete laxity of all the tissues; the skin and muscles very soft. Before opening the body I percussed the chest; the dulness of the liver seemed to me to ascend upwards as far as the fourth rib. The abdomen contained about four quarts of clear serum. The mesenteric glands were healthy; the peritonæum was unaffected. The pancreas was twice its natural size, and very hard, but not disorganized. The liver, red, and filled with blood, was one-half larger than natural; it was unaltered in structure, but between the convex surface of the right lobe and the diaphragm there was intimate cohesion by very strong and old adhesions; the gall-bladder was small, and contained some reddish-brown-coloured bile. The lungs on both sides were laterally and posteriorly connected by very old adhesions most intimately with the ribs; it was with very great difficulty I could separate them; the lobes were also similarly united. In front of the anterior and inferior part of the right lung there was some serous effusion; both lungs, the left especially, were in a state of interlobular emphysema, and were much gorged with blood; the lining of the bronchi was of a deep red colour, and the tubes were full of mucus. The lungs were free from tubercles. Three or four enlarged bronchial glands at the root of the lungs, the size of hazel nuts, were very hard, and filled with dry caseous material. The heart was intimately adherent to its pericardium, by thick and very strong adhesions; it was not enlarged; the valves were perfectly natural.

The enlargement of the liver in this case was purely secondary to the affection of the heart and lungs, which probably originated two years and a half before his death. Yet the child never betrayed any symptoms of having had such an affection, and I believe I may say that disease of his heart was not suspected by any one of the medical gentlemen under whose notice he was brought.

During the last few days his legs became swollen; the position he liked most to assume in bed was with his head lying on his hands, his body being supported by his elbows and knees. During the same time he was affected with vomiting and purging of colourless matters.

I made minute inquiry of his parents, both of whom assured me he never lay a day in bed in his lifetime; he never experienced until lately any difficulty of breathing, or anxiety referable to his heart or lungs, and no one was called to see him when he is said to have caught cold. At all events the case is highly instructive as to the injurious and even fatal consequence of exposing children, but half dressed, to the cold; and also is an additional proof of the difficulties in the way of diagnosing pleuritis and pericarditis in children.

In seven cases of hepatitis I noticed an occurrence of which I can find, with regard to children, no observation in the works treating of their diseases. The occurrence I refer to is pica, or an appetite for substances which are not food. It is known to affect pregnant women and chlorotic girls.

Pica, in children, depends probably on an altered sensibility of the nerves, and acid (though I can by no means prove an *aciditas esurina*(a)) state of the secretions of the stomach, owing to their being fed on depraved milk, or irregularly. As a general rule, this is one evidence of undue lactation, for of fourteen cases in which I noted it the average duration of suckling was twenty months; six of those cases were suckled two years and

(a) Burserius, Institutes of Medicine, vol. v. p. 372.   Edinb. 1803.

upwards; and one of them, weaned at one year, was continued at the breast for seven months, during the utero-gestation of a succeeding child. I have remarked that these little children eat greedily of coals, cinders, ashes, lime off the walls, dirt, shoes, paper, and even their own ordure.

Children affected with pica are very delicate and wasted, their complexion is sallow, anæmic, and waxy, the abdomen enlarged. The bowels are generally too free; the stools are of all colours, green, yellow, black, or white(a).

A cause of enlargement of the abdomen, to which I am most anxious to draw attention, is tumefaction of the spleen, which is allowed by all authors to be peculiar to adult life. This in children seems to be equally the consequence of undue lactation. I have notes of seven cases, whose average duration of suckling is nineteen months; and, excepting two of these cases (the mother of one of which was obliged to become a patient in a lunatic asylum; and the second being the one I have already noticed as having been suckled for seven months, during the gestation of a succeeding child), the duration of the suckling of the remaining five is twenty-one months. According to M. Nivet(b), of eighty-eight cases in adults, sixty-two were men, and twenty-six women; of my seven cases, four were boys and three girls; these numbers exhibit an equal rate of the affection in adult and puerile life.

I am acquainted with the fate of six of these cases, of which three are dead; it is therefore a serious disorder. Patients exhibit the appearances characteristic of prolonged nursing. Their peculiar aspect is well described by Piorry(c): "When the spleen has been long affected the skin gets a dull aspect; a greyish coloration presenting sufficiently well a light-coloured creole shade, but with colours less warm and more ashy. It is the inte-

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(a) Vide Report on Allotriophagia, by Dr. Volpato, in *Gazzetta Med. Lombarda*, No. 5, 1848; and ibid. No. 10, by Dr. Pignolo.

(b) *Archives Générales de Med.*, Mars et Mai, 1838.

(c) *Traité de Diagnostique et de Semeiologie*, p. 287.

guments of the face, especially, where this coloration is most remarkable. It is not the yellow ochrey colour of icterus, nor yet the discoloration of chlorosis ; it is a shade quite special, which has been very ridiculously called *bluish icterus.* Constantly, when this splenic tint is present, the sclerotic presents a dull *bluish white* under the conjunctiva." The conjunctiva is bloodless, and the patients manifest a perfect indifference to everything around them. They have a sickly, pallid look, and the wasting of the body is not in proportion to the paleness; they are truly chlorotic; they have invariably pica ; the bowels are generally irregular; the abdomen is full. The patient's bulk will remain pretty good for a long time, although he will become blanched in a state of anæmia. The blood is not proper in quality ; it is deficient in fibrine, and likewise in red particles. The peritonæum sometimes becomes affected, and produces ascites, which renders the detection of the spleen difficult, this existed in Case v.; and to a less degree, in a case of Dr. Croker's, where the patient died, apparently of phthisis, after having had for several months an enlarged spleen running obliquely across the abdomen. The diagnosis is generally very easy long before the spleen has attained a large size.

The heart is unaffected in those cases. It has been said that the spleen is often hypertrophied in scrofula and rickets. This, however, is by no means an established fact ; and when there is tumefaction of this organ there is no peculiarity about it, and the other viscera, especially the liver, are simultaneously engaged(*a*). This occurrence I have twice seen. Six of the cases I noted were aged from twenty months to two years. The seventh,—

Case V.—*Hepatitis ; Enlargement of the Spleen ; Death.*— William Owens, aged six years and nine months, had also hepatitis. He was admitted November 29, 1848, under Dr. Croker. His bowels had been generally too free from the time of his being weaned, at one year and three months. He was jaundiced

(*a*) *Dict. des Dict. de Med., Art.* 'Rate."

two years ago, and also last summer, when he was first observed eating lime. On the occasion of his being jaundiced he used to become sick, his breathing bad, and he complained of palpitations, and had then, as always, a great desire for drinking cold water. His stools were never white. A week before he came to Pitt-street he caught cold, and had considerable fever, with thirst, cough, and decided jaundice of the face. His belly was very large; the liver and spleen could with some little difficulty be felt enlarged, the former extending below the ribs. There was much œdema of the face and legs.

December 8th. The jaundice has disappeared; he is greatly swelled all over the face, abdomen, scrotum, and penis; he has also ascites. He lies on his back, wheezing and inert; his belly is very big; the stools are without colour; his pulse is tranquil; the heart's action is normal; the urine is natural in colour, and it does not coagulate by heat.

17th. Stools watery and bilious, not so frequent; pulse is very quiet; ascites remains the same, but the swelling in face and limbs has much subsided; the urine is quite natural. He lived to the 9th of January, 1849. He never lost his appetite for cinders, saying to his father, a few moments before he died, " Pa, I can't eat anything else."

This child complained of a stitch in his right side and shoulder before he was brought to Pitt-street, and in his illness used to get most relief by lying in bed on his hands and knees.

CASE VII.—*Enlargement of the Spleen.*—John Browne, aged one year and eleven months, admitted under my care July 9, 1847. This child is not weaned. His flesh is wasted and flabby. The skin sallow, dirty, earth-coloured. The belly is very large; the spleen being of an enormous size, and lying diagonally across the abdomen, reaching from under the ribs of the left side, down to the right os ilii. It can be felt most distinctly, having a well-defined outline towards the abdomen, as this is without effusion. The bowels are too free; the stools being green and watery.

He has been declining in health a year, and has suffered occasionally from irregularity of the bowels. His head is large; the fontanelles are open; the spine is rickety.

August 9th. The spleen is greatly diminished in size. He is only now weaned; his flesh and colour are returning; his appetite is good; his spirits are cheerful.

This child was seen by my friend Dr. Osbrey, as well as by the pupils in attendance on the Institution.

Dr. West takes notice of enlargement of the spleen, and connects it universally with intermittent fever, or malaria. Intermittent fever is, however, very uncommon in Dublin, nor do I know that it has been ever observed in patients before the end of their second year. I have only mentioned having seen seven cases, because I have noted no more; but I have seen it in several others, and in all arising from undue lactation. " The only instance of it," writes Dr. West, " which I have had an opportunity of observing, was presented by a little girl, six and a half years old, who had lived at Fernando Po from the age of two and a half years, having had dysentery at three years, and frequent attacks of fever subsequently. The enlargement of her spleen had first become apparent at five years of age, and when I first saw her, a few weeks after her return from Africa, it had attained so considerable a size, that her abdomen remained twenty-one and a half inches in circumference. The spleen in this case reached from under the ribs, quite down into the pelvis, and forward as far as the mesial line of the abdomen. Independently of the patient's history, which in a case of this kind would be of itself sufficient to prevent an erroneous diagnosis, the relations of the swelling were characteristic; for, although situated at the side of the abdomen, it did not extend backwards into the lumbar region, so as to fill it up completely, as an enlarged kidney would do, but a considerable interval existed between the posterior margin of the tumour and the vertebral column"(a).

(a) *Loc. cit.*, p. 446.

ART. IX.—*Objections to the indiscriminate Administration of Anæsthetic Agents in Midwifery.* By W. F. MONTGOMERY, A. M., M. D., M. R. I.A., Professor of Midwifery to the King and Queen's College of Physicians in Ireland.

I BELIEVE it would be no exaggeration to affirm, that the present age has witnessed no more remarkable event in medicine, than the application of anæsthetic agents, for the relief or prevention of suffering in painful operations.

But it would also be equally true to assert, that experience has proved that, like all other good things, this practice has its alloy of evil; and while we must acknowledge, with thankfulness and joy, the advantages and blessings which it has conferred, in saving so large an amount of human suffering, we cannot shut our eyes to the sad fact, that it has also *suddenly* cut short life in many instances, and at a variety of ages, from early youth to mature manhood.

And, in many instances also, where life has not been compromised, the administration of these drugs has produced symptoms of the most alarming and dangerous kind.

Such facts, which are perfectly incontrovertible, must, of necessity, moderate our enthusiasm, and render us cautious in the general use of such remedies, even where we see a pressing necessity; and when, in addition, we consider that there are certain morbid conditions of the system, of a kind which may but too readily escape our notice, and which increase to a frightful degree the danger to be apprehended from these powerful agents, it seems impossible to avoid the conviction that their *indiscriminate* administration, in any large class of cases, must be fraught with hazards of the most alarming character.

Impressed with such opinions, I felt it to be my duty to lay before the members of the Dublin Obstetrical Society, on a recent occasion, when they did me the honour to place me in the chair at their opening meeting, my views on the indiscriminate

administration of chloroform in natural labour; which I felt to be the more imperative upon me, as this subject had been pressed, or rather forced, not only on the profession, but the public, with an overweening zeal, quite unparalleled, as far as my memory affords me recollections of the introduction of new remedies.

A perfect avalanche of pamphlets and publications, in all forms, advocating and urging the adoption of this new practice, has fallen on the land; and these, instead of being confined to the hands of medical men (their only legitimate destination, as they are the only competent or safe judges of such a matter), have found their way freely into the drawing-room and the boudoir of private life; nay, it is even the fact, that some have so far forgotten the delicacy and reserve with which such matters should ever be treated, that paragraphs have been inserted in the public newspapers, announcing the delivery of ladies, " while in a state of insensibility from chloroform;" and those medical men who have hesitated about, or rejected the indiscriminate use of chloroform in natural labour, have been set down as deficient in energy, or in feeling and humanity.

Well, there is at least the charm of novelty in our being told that we of this land, whether as physicians or as men, are indifferent, cold, and unkind in our feelings towards the gentler sex, unwilling or reluctant to spare them pain(*a*), and

(*a*) Dr. Simpson has prefixed to his last pamphlet on " Anæsthetic Midwifery," a passage professedly quoted from Shakspeare, making, apparently, a pathetic appeal against the cruelty of those who refuse to give chloroform; it stands thus :

> " I do think you might spare her,
> And neither heaven nor man grieve at the mercy."
>
> MEASURE FOR MEASURE.

Now, I beg to observe that this passage is not to be found in the play here referred to; but the one for which it is substituted is part of Isabella's intercession with Angelo to spare the life of her brother Claudio, and her words are :

> " I do think that you might pardon him,
> And neither heaven nor man grieve at the mercy."
>
> MEASURE FOR MEASURE, *Act II. Scene* 2.

careless or regardless of their sufferings. If this be really so, I can only reply,

" Tempora mutantur et nos mutamur in illis :"

it certainly used to be otherwise.

We have been told, with somewhat less than courtesy, that, while facts take five years to reach London, they require ten to arrive in Dublin. Where they travel *from* is not expressly stated, but I presume we can have no difficulty in guessing: and while, fortunately, we need but simply deny the implied imputation, we cannot but smile at the self-complacency which thus arrogates for itself and its locality the possession of all wisdom, from whence it is to radiate,—though by such slow degrees,—until it illumines with its brightness the darkness of surrounding nations, and gradually enlightens the ignorance of such obscure and illiterate places as London and Dublin.

Be it so, if so it is; but for myself I must say, that I sincerely rejoice to think that here we do not too readily run, with schoolboy impetuosity, after every butterfly theory, which with gaudy wings is seen fluttering through its hour of evanescent life in our social atmosphere.

Instead of lending our aid to force or even urge rash proposals on our confiding patients, I hold it to be our solemn, bounden duty to stand as faithful and watchful guardians between them and their adoption of every new-fangled remedy which the ingenuity, or fashion of the day may place within their reach, and plausibly tempt them to make use of, until, by cautious trial and careful examination, we have fully satisfied ourselves of its safety and beneficial effects.

And I most sincerely hope and trust, that the day will never be when it can be said of Dublin, as is now declared of Edinburgh, "that we use it [chloroform] here constantly in midwifery; its omission being the exception, and a rare exception, to the general rule of its employment."

I believe that few, I hope that none, will ever be found so bold or rash, so enthusiastic, or so heedless of consequences, as

to keep every woman confided to their care in a state of stupe-
faction and unconsciousness, with her blood blackened, and her
brain poisoned, from the beginning to the end of her labour,—
a plan which, although at first recommended, is, I believe, no
longer practised even by the warmest admirers of anæsthesia in
midwifery; and yet, if not so carried out, the professed object
of this mode of treatment, making labour painless, is not ac-
complished. This point I shall notice again.

But I am happy to say that, so far as this country is con-
cerned, this mode of managing natural labour has, as yet, found
but little favour with us; and amongst the better educated
class of women, the great majority are, in general, decidedly
averse to it. Many have expressed themselves to me in terms
of the strongest reprobation of a plan whose professed object
was to deprive them of reason and consciousness; and I can
state as a fact, on what I believe to be the best authority, that
the same observations would equally apply to London as to
Dublin.

In the publications referred to it is plainly suggested that
the time is come when medical men are no longer justified in
withholding chloroform from every woman in labour; that
medical men may object, but that our patients will *force* it
from us, whatever we may think of its fitness: so that, although
we are to encounter all the responsibility, we are to be allowed
no discretion.

Whoever submits to such dictation gives up his indepen-
dence as a man, and, as a physician, acts dishonestly towards
his patient, and compromises the honour and dignity of his
profession.

This principle has been so far imbibed as to induce some pa-
tients to seek to exact beforehand a stipulation in conformity
therewith; but I feel great pleasure in adding that, in instances
within my own knowledge, where this demand was not com-
plied with, the refusal has been ultimately commended by the
parties concerned, and their friends, as highly creditable to the

medical man who declined to do what he did not believe to be right, or to promise what might not be for his patient's good.

And here let me suggest to the junior members of the profession, that they will generally find it thus through life. The man who steadily refuses to act against the dictates of his deliberate judgment and conscience, may—nay, certainly will often incur present inconvenience, annoyance, and pecuniary loss; but, in the end, he will be richly the gainer, in the peace of mind and satisfaction arising from the consciousness of having acted honestly; and amongst his fellow-men he will have higher reputation and an honourable reward. A true philosopher has said: " Others may be impatient, but we must possess ourselves, and act upon principle. The event will justify our conduct; and, though there may be temporary dislike and blame, if we do what is right, there will be permanent favour and reputation"(*a*).

The most extraordinary and varied efficacy has been attributed to this remedy, and effects the most totally opposite ascribed to its use.

By one writer we are told that, if uterine action is excessive, chloroform will abate it; by another, that if feeble it will strengthen it, and add new vigour to each parturient effort.

By one it is asserted, that it relaxes the tonicity of the uterine tissue, and thus renders the introduction of the hand more easy; and by another that it tends to control uterine hæmorrhage.

By several it is stated, that it relaxes in a remarkable degree the perinæum and external parts, and so diminishes the chance of their being torn; while a writer in its favour,—as quoted by Dr. Simpson,—tells us that this supposed effect of it appears to him " at least uncertain and accidental," and that, out of twenty-five cases in which he used it, he had two instances of rupture of the perinæum; and another writer in the

(*a*) Denman.

same work says that the influence of this drug, by accelerating the second stage of labour, especially towards its termination, by removing the resistance made by the muscles at the outlet of the pelvis, entails a risk of laceration of the perinæum in certain cases, " unless very great care is taken."

In several instances, the administration of chloroform has been followed by symptoms of a convulsive character, and in some, by actual convulsions, an affection to which pregnancy and labour peculiarly predispose the system ; and yet, we find another writer in a public journal recommending chloroform in the treatment of puerperal convulsious.

> " Can such things be,
> And overcome us, like a summer's cloud,
> Without our special wonder ?"

The favourable results in surgery have been appealed to, as triumphant proofs of the success and safety of this drug ; and as a cogent reason why it should be equally used in midwifery. But the circumstances attending the administration of chloroform for the performance of a surgical operation, and for the prevention of labour-pain, are widely different. In the former it is given to enable a patient to bear the sudden infliction of acute pain, for which, broken down, perhaps, by disease and suffering, weak in mind and body, he could not summon fortitude sufficient to submit voluntarily to the fresh infliction of torture from the surgeon's knife, without wincing, and thereby seriously obstructing, or perhaps altogether defeating the operation intended for his benefit, even though he be perfectly convinced that by no other human means can he escape death. And then, again, it is only necessary to keep such a patient under the narcotic influence for a few minutes.

Now labour, although accompanied by pain, is surely not a condition of disease ; nor is it a process, under ordinary circumstances, likely to take away or shorten a woman's life, or calculated seriously to compromise or interfere with her comfort after its termination ; no—assuredly, the God of all wisdom

and goodness has far differently ordained it; but if she is to be saved from the pains of it, she must be kept under the narcotic influence of chloroform for hours, perhaps many hours, and that, too, under the very condition of her system most likely to excite or aggravate the evil influences of the drug.

I totally deny then that " what holds good in relation to pain in surgery, holds good in relation to midwifery." No two things having a partial resemblance can be more essentially dissimilar than the pain suffered in a surgical operation and the ordinary, natural, physiological pain of labour, repeated at intervals more or less regular, leaving, in general, the patient, in those intervals of their returns, free from suffering, *in perfect health*, and, perhaps, full of cheerfulness, or calmly sleeping; and as these pains increase in force and intensity, they carry with them the sweet consolation, so often thankfully expressed by the sufferer, that she knows she is all the nearer to the consummation of her fondest hope, to see with happy heart, and clear unclouded brain, her new-born treasure smiling beside her.

A surgical operation is no part of a natural process; and there is generally in the mind of all, an instinctive horror of the surgeon's knife,—ay, to such a degree, that even the strong man and the brave, who many a time, perhaps, has led his followers through the fiery struggle of the battle-field undaunted, will recoil unnerved and sickening from the sight or touch of it; and as that knife slowly divides the tender skin, the quivering muscles, and the shrinking nerves, his spirit quails and sinks before the suffering which promises no other boon but to save him from a life of protracted suffering, or from immediate death. A surgical operation is finished in a few minutes; but if it were, like labour, to consist of several successive stages, which could only be accomplished after many hours' duration, what patient would survive its performance?

Does the sedative influence of chloroform, administered to a woman in labour, interfere with the activity of uterine con-

traction?—is it liable to impair, interrupt, or suspend the expulsive and contractile power of the organ?

These are obviously questions of the most vital importance, considering, that on the perfection of the expulsive and contractile energy of the uterus depends not alone the progress and completion of the labour, but also the safety of the mother.

That chloroform, when given so as to produce its *full effect*, is apt either to suspend or greatly impair the activity of the labour, is now, I believe, admitted on all hands. But is it liable thus to impair the uterine energy, when given only in such moderate doses as have the effect of soothing the patient, and decidedly mitigating her suffering? I have no hesitation in asserting the affirmative ; and I think this is now beginning to be admitted even by the most ardent supporters of anæsthesia. " The degree and depth of anæsthesia," says Dr. Simpson, " which different patients are capable of bearing, without the irritability and contractions of the uterus being impeded, appear to differ greatly in different persons. In some a very deep state will still leave the uterus almost or altogether unaffected; in others its action is interrupted by a comparatively slight degree of the anæsthetic state"(a).

Dubois, long since, announced this effect of the inhalation of ether during labour, as happening " occasionally." My own experience with chloroform has shown me that it is of *very frequent occurrence ;* and I have been informed by several medical friends, that their experience on this point coincides with mine.

But it has been urged on the other hand, that, to avoid this, we need only give it, just to such an extent as to render the patient so far insensible to the pain, that she is only conscious of the uterine contraction as a fact, but not as a suffering. Now I know as an absolute fact, which I have witnessed in several instances, that we will often find the uterine energy decidedly

(a) Anæsthetic Midwifery, p. 18.

impaired by the sedative effect of the chloroform, and our patient still remain perfectly sensible of the pains.

My own observation on this point has been, that if the patient be brought under the influence of chloroform before the os uteri is dilated, or at any time, with the uterine energy feeble, we will then find, that it will diminish that energy still more; and in proportion as the calming effect of the drug is produced, the expulsive force of the uterine contractions will be impaired, and the labour retarded. And I believe it is now admitted by even its warmest admirers, that chloroform, given so as to produce its full effect, will frequently paralyse the uterine energy, even when most active; and in proportion to the degree in which this enervation of the uterine vigour is thus induced, and especially if it occur towards the conclusion of the labour, the patient is unquestionably thereby more or less predisposed to imperfect uterine contraction after the birth of the child, and, consequently, to retained placenta and hemorrhage. Such has been my experience in this matter, and I have heard from others many facts corroborative of the occurrence of such results.

I very recently saw labour interrupted by so moderate an administration of chloroform, that the lady continued talking of the delightful sensations she experienced; but, at the same time, the uterine contractions lost all their former energy, returned less frequently, and lasted a shorter time, in consequence of which I withheld the chloroform altogether; but the uterus did not, for some hours, regain the same degree of activity it had previous to the inhalation of the sedative: and I have witnessed the same result in other instances.

Experience has now shown, that in order to secure to the patient *complete immunity from pain*, chloroform must be administered to such a degree as to take away reason and consciousness; and, when so administered, it is liable to induce apoplectic stertor, convulsions, partial paralysis, impairment of uterine contractile energy, and other still more formidable consequences.

The bare possibility of producing, in any patient, such symptoms as these, by an agent however valuable, renders it absolutely imperative that we should first see clearly the *unequivocal necessity* of administering it; and, secondly, that we should carefully distinguish the cases, in which the more serious symptoms arising from its use are likely to occur, as where there are already existing signs of determination to the head, or disease of the brain, lungs, or heart.

Now I think these observations apply with peculiar force to the use of chloroform in labour, in which, in order to accomplish the object proposed, it must be administered for so much a longer time than when given for other purposes; and it must not be forgotten that in many of the cases of labour which come under our observation in the course of practice, we have little or no exact knowledge of the patient's previous history and state of health, so as to be aware how far she may, or may not have exhibited symptoms of those formidable affections just alluded to, and which render the administration of this drug an experiment of such alarming hazard.

It is a well-known fact that, in the immense majority of instances, women pass through the ordeal of labour, even when severe, with impunity, and recover well; and the sorrow and the sufferings of the past struggle are soon obliterated from the mind, by the sunshine of the infant's smile.

If, therefore, a powerful medicine be administered, except for some strong reason, some unusual or pressing necessity, and that evil consequences ensue, the remedy so administered will naturally be regarded as the cause, and the person who gave it as the author of whatever injury may follow, and perhaps not without good reason. Now let me not be mistaken, or supposed to wish to deter any one from using whatever remedy he, after due consideration, conscientiously believes necessary and likely to do good, under the existing circumstances, but at the same time not fraught with qualities equally or more likely to do harm eventually. Very far from it. All I wish to inculcate is, the

paramount importance of carefully considering, and being convinced of the *necessity* for its use, and that it shall not be abused; which I consider to be glaringly the case when such a subtle and powerful agent as chloroform is administered to a woman in perfectly natural labour, going on safely and favourably, and perhaps with every indication of being soon released from her trouble, with no other object than that of rendering her insensible to a part of the ordinary degree of pain which the Almighty in His wisdom has connected with the process of parturition;—while she is, at the same time, exposed thereby to the risk of consequences, especially in inexperienced or careless hands, which may suddenly cut short her existence, or seriously affect her future health.

I believe I am fully justified in saying it is now certain, beyond all doubt or cavil, that in several instances the administration of chloroform, for a variety of purposes unconnected with labour, has caused death—and that, *sudden death!*—and is it probable, is it reasonable to expect, that women in labour shall constitute the only class exempt from the dangerous influence of this drug?

Under all circumstances " it is a fearful thing to die;" but it is doubly awful when death comes suddenly, and finds the being who is about to pass from Time into Eternity utterly bereft of sense and reason, and without the power even to ejaculate, with the disciples in their hour of danger, " Lord, save me, I perish."

An observation of Professor Meigs, of Philadelphia, in his letter to Dr. Simpson, is so entirely consonant with my sentiments on this matter that I here adopt it as my own: " I readily hear," says he, " before your voice can reach me across the Atlantic, the triumphant reply, that an hundred thousand have taken it without accident. I am a witness that it is attended with alarming accidents, however rarely. But should I exhibit the remedy for pain to a thousand patients in labour, merely to prevent the physiological pain, and for no other motive, and if I should in consequence destroy *only one* of them, I

should feel disposed to clothe me in sackcloth, and cast ashes on my head, for the remainder of my days."

Now the object for which it is so eagerly proposed to incur the risks already alluded to is simply to do away with the pain attending natural labour. Then the question presents itself,— is the ordinary pain of labour, *in general*, so great in amount, so intense in its character, or so injurious in its consequences, that we would be justified in running any risk to avoid it, or rather a part of it, for the whole of it cannot be annulled? I think universal experience would answer these queries in the negative.

Experience has shown that very rapid, easy, and comparatively painless labours, besides the risk of present injury which they entail, are by no means those least liable to serious casualties during their progress, or from which women recover most favourably.

I have met with but one instance of a woman who bore children without pain. That lady had eight children, and she never gave birth to one of them without being in the most imminent danger of losing her life from hemorrhage.

It seems to me that the greater pain and risk encountered by the human female in parturition are intended (as they certainly are calculated) to teach us our mutual dependence on each other for kindness and assistance, and thus to draw closer the bonds of love and attachment which should unite man to the cherished object of his dearest and holiest affections.

In the progress of ordinary labour our judgment is assisted by the natural expression of the pain suffered, as indicating its true character and efficiency, and so affording a guidance not lightly to be dispensed with; and where we are obliged by adverse circumstances to interfere artificially with labour, whether by instruments or otherwise, pain, *unduly* excited, is the warning voice which tells us that we are doing something not as we ought, and calls to us to desist or change our course of action; and woe betide us, if we disregard the warning.

I was once consulted about a case where the gentleman in attendance told me himself that he had attempted, as he thought,

to rupture the membranes with his pointed nail, and only desisted in consequence of the patient's complaints that he was cutting her; which was the fact, as he was endeavouring to perforate, not the membranes, but the distended and attenuated anterior section of the cervix uteri. In this instance, had the lady been in a state of unconsciousness, we can hardly doubt that mischief of a very serious kind would have ensued.

It has been asserted that pain is the agent which destroys life in protracted labours, because it can be shown that the mortality is in direct proportion to the length of time the labours lasted; and it is alleged that, if the pain of parturition were cancelled by anæsthesia, we would have more favourable results, that we would " increase the chances of a more speedy and a more healthy convalescence." Now, I would ask, does any one believe that, when a woman dies of the effects of a protracted labour, it is the pain suffered which causes her death, and not the long-continued struggles, and efforts, and pressure on soft parts, causing fever, vascular congestion, inflammation, and sloughing, &c.?—or can we believe that chloroform could annul or remove these agencies which really do the mischief, even were we rash and reckless enough to keep the woman under its influence throughout the lengthened ordeal of her tedious labour?

Do women recover better who have been treated with anæsthetic agents during labour, and are there fewer deaths among them? The results recently published by Dr. Simpson(a), of 245 cases of labour, all treated with anæsthetic agents, of which five died, or one in forty-nine, most assuredly do not confirm such a doctrine.

From the way in which this subject has been rung in the ears of society, an idea has been engendered in the public mind that by means of chloroform labour may be divested of *all* suffering, from beginning to end; that the moment labour commences the woman need only begin to inhale this " sweet ob-

(a) Anæsthetic Midwifery, pp. 13, 21.

livious antidote," and so continue in a placid slumber until all is over; "and then awake, as from a pleasant sleep," to receive her child, and the congratulations of her friends.

I suppose I need hardly say, that such an elysium of labour is only to be found in print, or in the imagination. I believe that no one who has sufficiently tried chloroform, and watched its effects, now gives it in the first stage of labour, except in an extreme case; its administration is reserved for the expulsive part of the process, by which time the patient has passed through that portion of labour which, with the exception of the actual birth of the child's head, is in general the most intolerable part of it, namely, while the dilatation of the os uteri is taking place, under the influence of what are popularly termed "the grinding pains," at which time the suffering is apt to be almost incessant, and of a most irritating and insupportable character, sometimes disturbing the nervous system to such a degree as to produce temporary delirium. Chloroform given at this stage may relieve the pain, but it will almost certainly in the same degree impair the action of the uterus, and retard the progress of the labour; and even if it did not, I believe very few would now consent to keep their patients in a state of stupefaction for twelve, twenty-four, or "*twenty-eight and a half hours*," as one gentleman tells us he did!

I entirely agree with Denman that labour is not "a trick to be learned," but "a regular process of the constitution," and "that women may be assured that the best state of mind they can be in at the time of labour is that of submission to the necessities of their situation." "Instead, therefore, of despairing, and thinking they are abandoned in the hour of their distress, all women should believe, and find comfort in the reflection, that they are at those times under the peculiar care of Providence; and that their safety in childbirth is insured by more numerous and powerful resources, than under any other circumstances, though, to appearance, less dangerous."

In childbirth, as in many other trials, it is the merciful dispensation of an all-wise God, that, though "heaviness may en-

dure for a night, joy cometh with the morning," when, the trouble past, the happy mother rejoices in safety over her new-found treasure. How sad, how awful the reverse, should we, by an unnecessary and indiscriminate interference, substitute sorrow and mourning for this holy joy; or spread the gloom of death over a household which would otherwise have been gladdened with the sunshine of happiness and thanksgiving.

I attach no value to what are called the " religious objections" to the use of this remedy; but, at the same time, I am very far from approving of some of the arguments which have been used against those who entertain such objections; for instance, I think it is unreasonable and indecorous to stigmatize as " wild and fanatical" an attempt dispassionately made to discuss the question; and I must add, that I read with indescribable amazement Dr. Simpson's allusion to the removal of Adam's rib, in which the Almighty Creator of heaven and earth, and of all mankind, in the accomplishment of a great mystery and miracle, is held up to us as our precedent and example in this mode of practice, as having thrown Adam into a deep sleep, before performing on him " *the first surgical operation ever performed on man.*"

A cause which requires such assistance as this, one would suppose, must be in great need of support(*a*).

(*a*) Dr. Simpson has prefixed to his pamphlet in answer to " The Religious Objections" to the use of anæsthesia, two texts, which are obviously intended to construct from Scripture an argument for the use of chloroform, or some such agent, for the abolition of pain. These are the passages :

" For every creature of God is good, and nothing to be refused, if it be received with thanksgiving."—Tim. iv. 4.

" Therefore to him that knoweth to do good, and doeth it not, to him it is sin."—James, iv. 17.

Now I think I am justified in saying that the statement and inference therefrom here intended are, that chloroform is a good thing, and to be gratefully received; and that, therefore, whoever refuses to give it thereby commits sin. I beg to observe that the use here made of the first text is a complete perversion of the meaning of the Apostle Paul, who is there speaking of articles of food,—meats from which he declares there is no necessity for abstaining. And with reference to the quotation from the Apostle

To sustain fully the " religious objections" to the use of chloroform in labour, we should equally deny the propriety of using all, or any other means of shortening or alleviating the sufferings of the parturient woman,—an absurdity too glaring to require comment.

I believe, and am convinced, that in adding pain and suffering to human parturition there was, on the Almighty's part, not alone wisdom, but, as in all His other providences towards us, goodness and mercy also;—will any one deny this? But, to use the same words which I addressed to the Obstetrical Society formerly, "I know that the sorrow and the suffering are permitted to be abridged in their duration, and alleviated in their degree, by the judicious interposition of a well-timed assistance"(*a*); I feel persuaded that all other pain, and sickness, and suffering, are equally ordained of God, as the pain of labour; and nobody, I believe, doubts that man is permitted to use all safe and proper means for their relief. Nay, he is endowed by his Maker with the special attributes of mind and reason, by which he may, in addition to many other noble privileges conferred upon him, judge and discriminate, and determine on the fitness or unfitness of each remedial agent, and use or reject them accordingly. And the medical practitioner is called upon by every law, divine and human, to exert his utmost endeavours to relieve pain and disease, by whatever remedies he believes to be most suitable and efficacious, but at the same time safe in their present use, and not likely to be indirectly or ultimately injurious to the system.

Nobody, I believe, has ever objected, on religious grounds, to the use of the forceps in midwifery(*b*), or to turning a child

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James, which is placed as if it were a direct conclusion from the other, I beg to say that it has no more connexion with it, than exists between the two texts by which some one undertook to prove, that suicide was recommended in the New Testament.

(*a*) See Dublin Medical Journal, former series, for 1844, vol. xxv. p. 182.

(*b*) But what should be justly thought of the man who carried instruments about with him on all occasions, and in every case of natural labour

when misplaced, or for other reasons rendering such a step imperatively necessary for the patient's benefit. Nobody, I believe, has ever doubted that it is lawful for all, whether physicians or not, to use means to retard the approach, or avert the stroke of death; although death is, by God's decree, appointed unto all men.

But the real question is this, are we to interfere indiscriminately with every perfectly natural labour at which we are present, no matter how healthy and favourable its character, or how expeditious in its progress, and, for the sake of enabling our patient to avoid a part of the ordinary amount of pain, however moderate, or in compliance with the solicitations of the timid, the demands of the impatient, or the caprices of the fanciful, administer on all such occasions a subtle drug, of uncertain effect, but of great and dangerous power,—a medicine which experience has fully proved to have, in very many instances, the effect of impairing the uterine energy and retarding the labour, and the full administration of which has been frequently followed by still more unfortunate results?

made use of the forceps or lever, because he *could* thereby diminish the amount of suffering, by abbreviating its duration, and *might*, in many cases, use them with safety to both mother and child? And if, as a preliminary to such a proceeding, he deprived his patient of consciousness by administering chloroform, he might not only shorten her labour, but save her all further pain; but one trembles to think what would be likely to be the results of such practice. And yet, if matters continue to progress in their present course, I can not only easily imagine, but would fully anticipate, that there may, ere long, be found some one who will not hesitate to conjoin the two modes of relieving and shortening the suffering of labour, and proceed to practice with a bottle of chloroform in one pocket, and a pair of forceps, or some other mechanical contrivance, in another; and while, by means of the former, he throws the patient into a state of insensibility, and so annuls her pain, will, with the latter, curtail the duration of her labour by some one, two, or three hours, and then leave her, perhaps, to mourn in bitter sorrow for years to come, the extraordinary benefit and saving of suffering derived at his hands. Might we not reasonably anticipate of such a one that he would indeed be likely to

> " Play such fantastic tricks before high heaven
>   As make the angels weep."

The common sense of mankind will, I feel as thoroughly persuaded as I sincerely hope, give an emphatic negative in reply to such a proposal.

Now let me observe, in conclusion, that while I object, and most strongly and solemnly, to the *indiscriminate* administration of chloroform in natural labour, I fully acknowledge its value and utility in general in obstetric operations, such as instrumental delivery, turning a child in utero, or the removal of a retained placenta, and also in some peculiar circumstances of natural labour, independent of any operation. Thus, I would give it in a case where the pain greatly exceeded its usual amount, and became intolerably severe. I would also use it in those cases occasionally to be met with in practice, in which a severe nervous pain is superadded to the ordinary pain of labour.

Thus, in one case, such frightful pain was endured along the course of the sciatic nerve that I thought the lady would have lost her senses, although a woman of a steady, sensible, and strong mind, and naturally very patient.

In another instance, a spasmodic pain attacked the sphincter of the rectum with such overpowering intensity and torture as to render the lady absolutely frantic. In such instances as these, I would certainly have administered this remedy, had it been known at the time of their occurrence, which, however, was before its introduction into practice.

With regard to its use in obstetric operations, while I fully acknowledge, as I have already stated, its value and utility *as a general rule*, I must add, that I think there are circumstances which should modify our *universal* adoption of it even for such purposes, lest we should for the sake of avoiding a temporary inconvenience, run the risk of entailing a more serious and permanent evil. Thus, for instance, in a case of retained placenta with hemorrhage, and a very flabby, uncontracted, and inert uterus, I think we would better consult the ultimate safety of the patient by omitting it, and subjecting her to the temporary suffering of passing the hand into the uterus, which

would thereby be more effectually stimulated to contract, and to retain its contraction.

And again, I would say that, instead of commencing, in all operations with the crotchet, by first putting the patient under the influence of chloroform, and throwing her into a state of insensibility, it would, in my judgment, be more judicious to wait, before giving it, for a reasonable time after reducing the head, to see whether the uterine energy might not be sufficient by itself to force down, and perhaps expel the diminished head, a result always most desirable, for many important reasons, and which we will certainly be much more likely to impede than promote, by placing the patient in the first instance under the paralysing influence of chloroform.

Then again, in all such cases of instrumental delivery, we must never forget that our patient, if under the full sedative influence of chloroform, has lost all power of warning us of any accidental error which we may commit in operating, of which her pain would warn her, were she not in a state of insensibility; it, therefore, behoves us, under such circumstances, to use the utmost caution and circumspection (at all times most necessary, but here in a far greater degree), lest, without being aware of it, we should inflict an injury which our best efforts afterwards might fail to remedy.

The foregoing pages (with the exception of the notes) contain the observations on this subject offered to the Obstetrical Society on the occasion already referred to, and which I now publish in consequence of a request to that effect made to me by the Committee of that Society.

For those who have advocated opposite opinions I entertain all the respect and deference to which they are entitled; but, at the same time, I firmly believe they have acted with a " zeal not according to knowledge;" and I felt it to be my duty, when addressing the young, and ardent, and inexperienced, to warn each among them against being dazzled by a delusion, or seduced by an *ignis fatuus,* which might lead him far astray from the path of safety, inviting him to aim at results which

can only be attained at the expense of indiscriminate, and, therefore, unjustifiable interference with natural labour, by which, sooner or later, to use the words of Denman, " He will be taught, although he may acquire momentary approbation by endeavouring to remove every little present inconvenience, that diseases then far distant will be attributed to his misconduct, and sometimes not without reason."

ART. X.—*Report upon the recent Epidemic Fever in Ireland.*

(*Continued from page* 126.)

PROVINCE OF ULSTER.

Summary of Reports.

Dr. Betty, of Lowtherstown, continues:—

" In *proportion*, the disease was more fatal in the better classes than among the poor. I never saw purpura but in one case, which recovered. All ages were indifferently attacked, but females more frequently than males. In the aged, with chronic affections of the lungs or liver, it was usually fatal. Relapses were seldom seen; I never remarked petechiæ in them. Some individuals of the same family had the disease milder than others, although subject to the same infection. Crisis usually appeared with perspiration, but sometimes the exact state could not be ascertained. I never had a case with epistaxis; any case attended with convulsions was fatal.

" I never observed any enlargement of the spleen, as I had no opportunity of making a *post mortem* examination. I never had any case with bed-sores in my hospital, as I make the nurses be very watchful and particular as to cleanliness with the patients. About three weeks, I think, is the usual time the patients were in convalescence.

" I have no doubt, if the disease is seen in time, that an emetic will cut it short, and that convalescence may be expected on the third, fifth, or seventh day. If the disease is not checked, I usually treat it in the common way of fever, watching any extraordinary symptoms. General bleeding I think a very bad

practice in this epidemic, and it seems that, if there is recovery *at all after it*, it is always very slow. Mercury I have seldom had occasion to use, except where the liver was deeply engaged. Wine I always found to hasten recovery. Opium I have tried without any good result, although given with antimonials."

From Cookstown, in the county Tyrone, Dr. Henry Graves has forwarded the following report:

" In the spring and summer of 1847 I had an opportunity of seeing more than 600 cases of fever. Upwards of 200 of these were under my own care, some in the temporary fever hospital at Luney, in the county of Londonderry, but the great majority as out-patients of the Magherafelt Dispensary, of which charity I had charge for some time, during the illness and convalescence of Doctor Vesey, who narrowly escaped falling a victim to the disease.

" When my attendance at the charity commenced, the epidemic was raging with its utmost violence. In May, June, and the beginning of July, the scourge was at its height; towards the end of the latter month it began to decrease, and through the months of August and September, with one or two slight and unimportant exacerbations, it continued to subside, though for nearly half a year afterwards the country did not attain its usual state of health.

" This epidemic did not confine itself to any particular class of society ; still I think I may say that the ratio of susceptibility (if I may so speak) was in proportion to the exposure ; *e. g.* the medical attendant of the dispensary and poor-house, the masters (one died), the two fever nurses (one died), the school-master, the baker, the porter (three times seized—died), in fact nearly every official brought into the vicinage of infection, suffered sooner or later. I may mention a curious fact, that not one of the poor-law guardians, a class of men who, in other parts of the country, were cut off in numbers, had fever; and this I attribute to their meetings being held in the market-

house, which is more than half a mile distant from the union workhouse.

" But from first to last the lower classes were those who suffered most. Deprived of their natural and accustomed food,—reduced almost to the lowest amount of nourishment on which human beings can exist,—cooped up in miserable, filthy, ill-ventilated, and worse-drained hovels,—never, in their most dire distress, refusing admission to the poorest and most abject mendicant,—how could they escape? Yet, strange as it may appear, these poor creatures fared best in the end, in proportion to the numbers attacked. With ordinary care the mortality among them was far smaller than among those better off in worldly circumstances. I cannot call to mind any remarkable differences in these cases, save that the poorer classes were rather more liable to enteric subacute inflammation, whilst among the more wealthy, secondary affections of the lungs, and less commonly of the head, were not unfrequently met with. When the patient had for some time been in want of sufficient food, when starvation bordering on inanition had occurred, we looked for fever as almost certain; and here it was noticed that petechiæ often, maculæ more usually, and not unfrequently blue and purple blotches, resembling scurvy (such as those described by the late Dr. Curran), with swelling and pain in the extremities, were met with: the spots showing themselves very early, and the extremities being more generally affected during convalescence. Typhoid symptoms appeared unusually soon in almost every case, and I imagined that the greater the starvation and want the sooner did they set in. Diarrhœa was very common, coming on at all periods of the disease, but when treated promptly there was generally little difficulty in controlling it; of course I do not include those who had been previously run down by intestinal discharges; and when the case was complicated with dysentery a fatal result was much to be dreaded. In a considerable number of typhus patients dysentery had for some weeks preceded the attack; in fact the latter not uncom-

monly ran so gradually into the former, that it was difficult
to fix the date of the febrile seizure.

"Complications occurred in the following order of fre-
quency : 1st. Gastro-intestinal, indicated by tenderness of abdo-
men, tympanitis, diarrhœa, and dysentery. 2nd. Pulmonary
affections, bronchitis, and pneumonia. 3rd. In several instances
we had hemorrhage from the nose to a great extent, and this
not critically, but coming on while the disease was progressing,
on its subsidence leaving the sufferer debilitated, without pro-
ducing any advantageous result. One unfortunate man had
passed the seventeenth day ; everything seemed going on well,
tongue cleaning, pulse coming down, and in fact I considered
him convalescent, when suddenly, without any appreciable
cause, violent epistaxis came on, which obstinately resisted every
means used, both general and topical. I plugged the posterior
nares before the bleeding ceased; for a few hours he seemed to
rally; again hemorrhage recurred, this time from the mouth;
he began to pass bloody stools, though a careful examination
satisfied me that no blood escaped from the nose to the stomach;
and he died on the twenty-first day, apparently from pure ex-
haustion. He had previously lived for more than two months in
the utmost penury, with a pride not uncommon among the lower
classes here, refusing relief, and, as I was informed, for a consi-
derable period not tasting food but once in the day, and that too
of the worst description (stirabout made from damaged Indian
corn-meal). Here a *post mortem* examination would have been
of extreme interest; but I found it, as in most other instances,
quite impossible to overcome the repugnance of the relatives
to such.

Males were more susceptible of the infection than females,
and those between 17 and 34 were oftener attacked than
either the very young or the aged. This may have arisen
from two causes :—1st. Individuals in the middle period of life
are, from their habits and pursuits, brought more in contact with
contagion, are more exposed to the exciting causes of disease,

e. g. cold, wet, intemperance, and so forth. 2nd. In a commu-
nity, the inhabitants of this age are more numerous than those
of any other interval of similar length.

" Relapses were common; they frequently might be traced
to disobedience of the rules laid down by the physician, or to
irregularities in regimen; to eating largely of some indigestible
food, to some exposure to damp or cold air, or to drinking a
quantity of spirits, perhaps brought to the patient by some
kind but injudicious friend, and such like; but under the most
promising and favourable circumstances they occurred, gene-
rally, however, in a mild form, and, unless accompanied by
diarrhœa or dysentery, the type was much less formidable than
in the primary cases. I am not aware that petechiæ were met
with in the relapses when they had not been thrown out in the
primary attack. I saw some eight or nine patients who *relapsed
three or four times.* As a general rule, every subsequent attack
was slighter than the preceding.

" Crisis was of such rare occurrence that we did not look
for it. The patient went on in the usual course for from
twelve to eighteen or nineteen days; then, perhaps, without
any appreciable change, fell into a quiet sleep; the stertorous
breathing, injection of the conjunctivæ, low, muttering delirium
(which we often met with), and other bad symptoms, subsided,
and, at the following visit, we found the patient much im-
proved, and with a falling pulse, maculæ or petechiæ fading, a
tongue either entirely moist, or cleaning at the tip and edges;
answering questions somewhat collectedly; and from this date
the case might be considered convalescent. Convalescence was
invariably slow. It is difficult, if not impossible, among a scat-
tered and pauper population, to note the duration of recovery;
but from my recollection, I think it was much more length-
ened than in the ordinary endemic typhus of this country.

" It will be remembered that the late epidemic was charac-
terized by an extraordinary degree of prostration and debility.
The words of Dr. Stokes may be aptly applied to it: ' It was

marked by all the signs of putridity. Dark-coloured and abundant petechiæ, soreness of the mouth, fetor of the surface, extreme prostration and stupor, were the prominent features of the disease; and in many cases bronchial and gastro-enteric irritation existed to a great degree.' Stimulants were thus, in a vast number of cases, undoubtedly indicated; and the young practitioner naturally looked for some rational guide as to the proper period for commencing their exhibition. Bearing in mind, then, the observations of the author just quoted, my attention was, at an early period, directed to the state of the heart. In a great number of patients I carefully examined the cardiac region, and the result of my experience may be stated in a few words. The action of this organ, sometimes as early as the fourth or fifth day, became weakened, and its impulse much less strong than natural, while the sounds diminished in intensity, though I cannot say that I ever noticed the total absence of either. Sometimes, when the first sound had almost disappeared, while the patient was lying on his back, by a slight change of position it was heard with much more distinctness. The same remark will apply to the impulse. I never heard the first sound predominate, and I am forced to say that I think I had sufficient grounds for believing that the pulse afforded a very constant and accurate index of the state of the heart; when the former was weak and thready, the latter beat with less than normal force, and its sounds were proportionately diminished. However, with the indications of weakened or oppressed circulation, I did not hesitate to give wine, punch, or whatever stimulants were available; and it was observed that, when they agreed, the pulse came down in frequency while it increased in strength, the tongue grew moist, and sleep often followed.

"From what I have already said it will be gathered that stimulants were freely used, and that, too, at an early period. It was found necessary to continue their use much longer than is usually done, convalescence being tedious, and the subsequent debility very great. I very frequently ordered

carbonate of ammonia, strong camphor mixture, with or without tincture of opium, and this combination was very useful, particularly when the supply of wine, &c., was scanty, or not to be procured. It answered nearly every purpose for which they were employed, was cheap, and, being small in quantity, easily administered ; and besides, being " physic," there was less inducement for the friends or nurses to help themselves. In but four or five cases was blood-letting resorted to, and this only locally, when there was determination to the head or chest. In bronchitis dry cupping answered well, at the same time that it did not depress the patient. Small doses of hydrargyrum cum cretâ, with or without Dover's or James' Powders, were not unfrequently given for a day or two at the commencement of the attack, but afterwards the antimonial was not repeated, except in a very few *pulmonary* complications. In general if diarrhœa or chest affection supervened, we returned to the mercurial and Dover's Powder. Change of diet had an astonishing influence on gastric attacks; in fact, a proper and judicious regimen seemed to stop diarrhœa and even dysentery, when medicine had quite lost its effect. This was evident on the removal of the sufferers to the hospitals. Good food could not be given at their own houses, but no sooner had they entered the hospital, and were put upon wholesome farinaceous and albuminous diet, than the bowel complaints ceased, and it was even occasionally necessary to administer a mild aperient. As far as I can form an opinion the proportionate mortality was somewhat greater in the hospitals, where the patients had every advantage of nursing and attendance, food, and clothing, than in the miserable habitations of the pauper, where not only the comforts, but the absolute necessaries of life, almost of existence, were unknown."

Dr. Hunter has furnished us with the following observations from the district of Bryansford and Castlewellan, county of Down, in addition to those of his already quoted in the previous details:

" It is right to premise that the poor of our district, though

suffering, in common with those of every other part of the island, from scarcity during the year 1847, were providentially exempted from that extreme misery endured in other localities; and though many were sadly *under-fed*, and suffered in other respects, I do not believe that actual starvation occurred in any one instance, so as to induce the ' famine fever,' described elsewhere. Dropsical effusions, especially anasarca, dysentery, and, in summer, scurvy, were the common results of insufficient and unwholesome food. But there was no actual starvation. Many causes contributed to this merciful exemption, especially the active, industrious, and prudent habits of the labouring classes in general, which had enabled them to provide some small resources upon which to fall back; and the prompt liberality of the landlords and more wealthy classes, who at once came forward with liberal subscriptions, and formed relief committees, to provide for the destitute. These relief committees were admirably managed, and of the utmost use.

" We had not more than the ordinary average of fever cases till the month of April, 1847, when the disease spread rapidly, increased during the summer months till September, in which the greatest number of cases occurred, and gradually declined till December, when they had again sank to their usual average. The disease, as is usual in such cases, was more violent and fatal at the outset of the epidemic; and though the cases multiplied as the season advanced, the mortality did not increase in proportion; on the contrary, a very large amount of those attacked recovered. The great majority were of the poorer classes; and in these cases, when a family was once invaded, few individuals escaped the disease; and I cannot doubt that, in many instances, it was propagated by contagion. When it did attack the more opulent and upper classes, the symptoms were far more formidable, and the danger to life greater. Indeed the recoveries of the poor in their own cottages, destitute of almost every comfort, were astonishing. We had no fever hospital within ten or twelve

miles, and the difficulty and danger of removal were great; so that, though a good many cases were sent to these institutions, by far the greater number were treated at home, and the result was very satisfactory, the mortality being remarkably low.

" Among the poor dysentery was almost universal, and in many instances most obstinate, often causing ulceration of the intestines, hemorrhage, and fatal results; these cases, especially in persons living as servants or operatives in the adjoining large towns, and returning to their native places while labouring under fever, were a class very difficult to bring through.

" Among the upper classes dysentery was a rare complication; in these, cerebral congestion, and head symptoms, with great disturbance of the nervous system, were by far the most common and dangerous.

" The invasion of the fever was generally slow and treacherous. Often for the first few days the pulse remained nearly natural, and the tongue clean; yet towards the seventh or eighth day the disease would assume a most formidable type, and run through the remainder of its course severely.

" Sometimes convalescence took place on the eighth or ninth day; but in a great majority of these cases relapses occurred, even though every precaution had been observed to guard against them. These relapses were seldom fatal, but induced great debility, and the recovery was very slow. The disease, in ordinary circumstances, generally ran on till the fifteenth or twenty-first day, and in a few cases even much longer. Decided crisis was not common; as the commencement of the disease was often insidious, so the mitigation of the symptoms was often so gradual, and liable to so much fluctuation, that decided crisis was rather the exception than the rule. Petechiæ were not common, but occurred in many cases; bed-sores also were occasionally met with, and were very obstinate, especially in neglected cases.

" As to treatment.—The disease was of a type which bore all lowering measures badly, and it was generally necessary to

allow moderate support from the first, and often to begin the use of wine and stimulants early; and these were usually well borne. Leeches were occasionally necessary to the head, abdomen, &c.; but general depletion was practised only in two cases of acute inflammatory complication, and with great caution. Both these cases recovered. Cold to the shaven head, gentle alterative aperients, diaphoretics, counter-irritation by blisters, sinapisms, turpentine, &c., and supporting the strength carefully, was the general practice. In cases of watchfulness and wild delirium the tartar emetic and opium, as recommended by Dr. Graves, was most useful; and when dysentery prevailed, mercury with chalk, with Dover's Powder, and chalk mixture with opium and astringents, and especially the acetate of lead, were chiefly relied on. In a word, I endeavoured to meet the symptoms as they arose, and did not rely on any routine mode of treatment, or adopt any remedy as specific. Mercury, cautiously employed, was most valuable, but was not often pushed so as to induce ptyalism.

" The population of the district is about 12,000 or 14,000, and the number of cases of fever under my care, among all classes, during the year 1847, was 681. Many other cases were, of course, in the hands of other practitioners."

Dr. Starkey, of Newry, writes:—

" During the prevalence of this disease we had many convincing proofs of its contagious character; as one I may mention the following:—In October last I attended several children affected with fever, each of a different family, and residing in different parts of Newry. As all presented the same symptoms, I was led to make a particular inquiry as to the origin of the disease; and discovered that these children attended a school in which one of the assistants had fever of a similar character. This fever, so contracted, was communicated in each case, without exception, to the parents.

" The epidemic chiefly attacked those who suffered from want of food; but, as usual, the comfortable classes did not es-

cape, the proportionate mortality among the latter being much greater than among the poor. I knew many families living in wretched poverty on the mountains near the town, who were attacked with fever, and who, without any medical attendance, and but little attendance of any kind, passed through the fever without a single death; whereas among the comfortable and intelligent the deaths were numerous indeed. As an explanation of this fact, I consider that it was owing to the greater frequency of local complications in the fever of the latter. In nearly all the fatal cases I saw in this class of persons the head was the part principally engaged. In November and December the most frequent local complication was affection of the lungs, situated in the under and posterior parts; in persons so affected we had dulness on percussion, and soft respiratory râles behind, with cough and quick breathing.

" This fever appeared to me to differ from former epidemics, in the very great similarity of the symptoms of all those attacked; in the early appearance, say the second or third day, of a maculated eruption resembling measles; and in the frequent occurrence of epistaxis at the commencement of the disease. The common duration of the fever was fifteen or sixteen days; seldom was there any distinct crisis; in some, epistaxis acted as such, in others perspiration and sleep were the usual critical phenomena.

" From my experience of this epidemic I felt convinced of the great reliance which should be placed on the efforts of nature; as in the great majority of cases, particularly among the poor, and when there was no local complication, very little treatment was required, an occasional purgative, and the timely administration of proper nourishment, being alone sufficient to bring such cases to a happy termination. Emetics given at a very early period, say during the first twenty-four hours, appeared to me in some instances to cut short the disease, or, if they did not, the fever was afterwards more easily treated. General bleeding was practised in several cases at the commencement,

and, according to my experience, almost always with bad results. I was called to see a Catholic clergyman in October, who, in the commencement of the fever, had himself largely bled; the consequence was, typhoid symptoms soon appeared, and he died in a few days. Local bleeding, however, in cases of complication, was useful, and followed by the best effects.

" With respect to mercury, I do not recollect a single person benefited by its use. A gentleman in Newry, when he discovered he was attacked with fever, took large quantities of calomel, which affected the system; the fever nevertheless proceeded on its course, and was much complicated, being one of the most severe cases here. As want of sleep was generally complained of, an opiate of acetate of morphia, combined occasionally with antimonial wine, was given towards the termination of the disease, and had often the most happy effect in allaying that restlessness and irritability so commonly observed in the disease at that period. Strong stimulants were seldom given, but wine and nourishing drinks were early employed to support the system. In some cases the sounds of the heart became very obscure; in these, wine in large quantity, and beef-tea, were our chief reliance, and seldom disappointed our hopes."

We insert the following extract from the report of Dr. Croker of Hillsborough :—

" The mortality here was small, being about three per cent. It appeared to me that those of the better class that were attacked with fever had it more virulently than the lower grade; but the proportion was very much less. The fever remained longer, and the cases were much more liable to relapse, in those who had been previously in want of food. Typhoid symptoms did not set in early; dysentery more frequently preceded the fever; the cases of scurvy and purpura were few. I cannot say from my own observation if there had been any epidemic in this district amongst cattle at the time, but should rather think not. The cases of fever were very liable to relapse, and were fre-

quently complicated with gastritis. The disease generally ran from eleven to fourteen days. Purpuric spots were not unfrequent in the latter stages; the relapsed cases generally set in about the third or fourth day after convalescence; petechiæ often appeared in the relapsed cases, which were not observed in the primary form; crisis was common, being generally preceded by soft tongue; epistaxis was not common,—in any cases where it appeared, it was in the latter stages; extreme tenderness over the spleen was frequently observed; bed-sores were not usually met. The frequent sequela of fever was anasarca. The treatment found most serviceable was the usual diaphoretic mixture, with small doses of hydrargyrum cum cretâ, together with generous diet, and wine when at all admissible. The mortality amongst those attended in their own houses was much greater than those who went into hospital. No general depletion was used, I may say, in any case and when the abstraction of blood was at all necessary it was by leeches; blisters were found very efficacious. Mercury and opium were used in many cases; the former was seldom pressed for any length during the fever, but often found of much benefit, combined with diuretics, in anasarca following as a sequela, &c."

Dr. Young's report from Monaghan is as follows:—

" My patients were of the respectable classes, varying in grade from the professional gentleman to the independent (if there is any such now) farmer; consequently I can give you no account whatever of *post mortem* appearances;—for here we have not yet arrived at such a pitch of refinement.

" According to my experience, no rank of life (remember the ranks I speak of do not represent the extremes of society) appeared to influence the fever in its mode of attack, its career, or the results. Males were more frequently the objects of its assault; and the middle time of life, in both sexes, was most obnoxious to the attack. There was no such thing as well marked crisis in any one case I saw; the longer the disease continued, the more confidently I looked forward

for a favourable result. I do not just now recollect any attack having proved fatal if prolonged beyond the sixteenth day, but I have watched some with very painful anxiety up to nearly the end of the third week, and have been by no means sure of the recovery of others until the fourth week had nearly terminated. Every case of sudden change within sixteen days proved fatal; there was no sudden change beyond that period that I recollect distinctly, consequently I think I can fairly report a recovery in all such, although my anxiety was considerably prolonged beyond this period in almost every case that came within my observation. During the career of fever head symptoms were the most prevalent; they varied from the slightest possible disturbance of the mental powers to controllable delirium. Some went through the entire fever, of nearly four weeks' continuance, without having presented to the ordinary attendants the slightest deficiency of intellect, or aberration of the senses; yet, to the surprise of those about them, on their recovery, confirmed my opinion of the whole period of their illness being a perfect blank in their memory. I do not know of any one case where blood had been abstracted, even by so few as six leeches, that recovery was the result, no matter how carefully the case had been attended to afterwards. Whenever I found blood had been taken previous to my visit, I looked for the result with the most serious apprehension, and, I regret to say, in no one single instance did my fears prove groundless.

" The spotting was universal,—it was present in every case; it generally made its appearance on the evening of the third or fourth day, reckoning from the period of the last chill which ushered in the attack, and was of every shade as to intensity, from trifling mottling to the actual subcuticular effusions of blood in patches varying from the size of a spangle to that of a silver four-pence. One case I recollect in which the brain was very early engaged, and the spotting universal, and very dark-coloured; the skin plainly exhibited the petechiæ to

the end of the third week after the fever had quite subsided, and during the convalescing, which I carefully watched.

" I had not any case of relapse amongst those I treated; but I recollect one case which was under my care subsequently, owing, I believe, to the patient having made a journey ere her strength was established sufficiently.   She got well.

" Bed-sores were not frequent; they were the result of debility; showing evidence of their approach so early as the fifth day, and running into broad and deep sloughs in spite of all care bestowed upon them. I do not remember that any of the fatal cases of fever were affected by them.

" The treatment, of course, varied very much.   Without giving you special cases, and the daily prescriptions, &c., I must prove deficient in my report of this; suffice to say, in every instance I avoided bleeding, either generally or locally. Where an internal organ required relief, I trusted to very frequently-repeated small blisters; and where I feared to employ even these, I found much benefit in employing a pomatum containing croton oil, which, on being rubbed into the head, did all I required, without inducing debility.   The treatment by tartar emetic and opium, according to the mode recommended by Dr. Graves, I found now and then of the greatest service. One case now strikes my remembrance as being somewhat remarkable, that of a young clergyman who was seized with fever after exposure to fatigue and wet.   I thought his was a case for the tartar emetic and opium treatment, and put him under it accordingly.   I remember it was pushed by me to the extent of twelve grains in the twenty-four hours, and continued for twelve days, the dose varying from four to twelve grains *per diem.* On two occasions when I suddenly reduced it, fearing gastric symptoms might be induced by the quantity I was giving, severe cerebral excitement was again manifested, so that I was compelled to resume it.   During all this time, whilst it was controlling the delirium, the only effect it appeared to produce to the ordinary attendants was increase

of appetite, and this increased in a direct ratio with the quantity of medicine used. The recovery in this case was perfect, after a fever of nearly four weeks' duration. Wine, camphor, mercury, opium, tartar emetic, and nourishment, were given in the different cases as they seemed to me to require it; and, in the end, I am thankful to say, I did not find the epidemic of 1846 and 1847 a very fatal one in my practice."

CONNAUGHT.

First Class of Queries.—The History and Antecedents of the Epidemic.

Sligo.—The fever was prevalent in this county. Previously to its outbreak the health of the district was very good. The epidemic commenced in the latter part of 1846. " Those whose health was below par were more liable to be attacked"(*a*). No class in society appears to have been exempt from the disease. Scurvy or purpura does not seem to have preceded its outbreak. The want of food appears to have influenced the disease amongst the people. The young were chiefly attacked, but it is not noticed whether the disease was more prevalent among males than females.

Leitrim.—The epidemic was very prevalent in this county. Dr. Munns reports that he had at one period in 1846 upwards of 200 cases at the same time in the workhouse of Carrick-on-Shannon. The sanitary state of the district was good previously to its outbreak, which occurred about June, 1846, in the town of Carrick-on-Shannon ; while in the remote northern hilly districts of the county it did not appear until December, 1847(*b*). Those that were attacked were for the most part previously reduced from want of food, and the lower classes in society were the first affected. Dr. Nash mentions that the fever was preceded by aphthous ulcers upon the tongue and gums. A disease prevailed among cattle previously to the

(*a*) Dr. Lynn, Sligo.   (*b*) Dr. Nash, Drumkeerin.

epidemic of fever. In Dr. Munns practice the greater number attacked were between the ages of six and twelve years; while Dr. Nash states that no age escaped, but that more elderly persons were attacked than usual. Females were more liable to the disease than males. The proportion of cases to the population of the district was very high.

Roscommon.—The general health of the district was not good previous to the breaking out of the epidemic, "bowel complaints having prevailed very much; but in some parts the health was in general good"(*a*). The disease, which commenced in the end of 1846 or beginning of 1847, was very prevalent. Those attacked were, for the most part, previously in bad health. The lower classes in society were chiefly attacked, but no class escaped. Dr. Cuppaidge reports that he has frequently seen the disease set in after recovery from the effects of starvation; and change of diet among the people appears to have materially influenced it. It was not preceded by scurvy or purpura. In the neighbourhood of Castlerea(*b*) and Athlone(*c*) there was no disease observed as being prevalent among cattle; but at Boyle an epizootic disease was both prevalent and fatal at the same time as, and previously to the breaking out of the epidemic(*a*). All ages were liable to be attacked, but the majority were from twenty-five to thirty-five years of age. There appears to have been but little difference in the liability of the two sexes, but Dr. O'Connell thinks that the males suffered more.

For the county of *Mayo* we refer our readers to the reports of Drs. Pemberton and Dillon, in the summary of this province.

Galway.—The epidemic of fever was very prevalent in this county. In many parts of it the health of the district was tolerably good previously, but in the neighbourhood of Ahascragh " dysentery and diarrhœa, caused by scarcity of wholesome food, prevailed much"(*d*). The disease commenced in

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(*a*) **Dr. O'Farrell, Boyle.**　　　(*b*) **Dr. Cuppaidge, Castlerea.**
(*c*) **Dr. O'Connell, Athlone.**　　(*d*) **Dr. Kearns.**

the latter locality about April, 1846, and in Clifden(*a*) in the autumn of that year, the district having been previously healthy, but elsewhere in the county, as at Kinvarra(*b*) and Oughterard(*c*), it did not begin until the spring of 1847. The health of the population was generally bad, the majority being worn down by want; and change of diet influenced much the disease. The lower classes, especially the destitute, were most affected, but no rank in life escaped. The disease very frequently set in after recovery from the effects of starvation, and Dr. Davis remarks, that relapses were very common in such cases. Neither purpura nor scurvy appear to have preceded the fever generally, but Dr. Kearns observes that purpura frequently accompanied the disease; and he also states that pneumonia prevailed among cattle in the neighbourhood of Ahascragh, both at the same time and previously; but this latter was not observed by either Dr. Hynes or Dr. Davis in their parts of the county. Young persons from 15 to 35 were chiefly attacked with fever, and females more frequently than males. The proportion of cases to the population of the various districts was very great,—ten per cent. according to Dr. Hynes.

For further information on this class of queries, see the reports of Drs. Lynch, Turner, Fry, Ormesby, and French.

Second Class of Queries.—The Character and Symptoms of the Disease.

Sligo.—Decided evidence exists in this county as to the disease being contagious. The fever was peculiarly characterized by the frequency with which purpuric spots appeared. Crisis was common ; the most usual critical phenomena were those so generally observed, diaphoresis and urinary deposit.

Leitrim.—Drs. Nash and Munns are of opinion that the disease was manifestly contagious. In the higher classes of society typhoid symptoms occurred earlier and were more

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(*a*) Dr. Suffield.   (*b*) Dr. Hynes.   (*c*) Dr. Davis.

marked(*a*), and head symptoms prevailed principally amongst them(*b*).   When the disease followed starvation, and especially dysentery, the effect of starvation, it was of the typhoid character, " the typhoid symptoms following the starvation state about the eighth day"(*a*).   The recent fever differed from former epidemics, according to Dr. Munns, in the more anomalous symptoms which occurred ; while Dr. Nash is of opinion that it was chiefly remarkable from the absence of any marked crisis. Purpuric spots were very common. Crisis was in general very obscure, and not common ; when it appeared the critical phenomena were diaphoresis, increased secretion of urine, and rarely epistaxis.

Roscommon.—In this county, also, the evidence is in favour of the contagious character of the fever. " All the officers," writes Dr. O'Farrell, " of the two fever hospitals of which I had charge, with the exception of myself and another, were attacked with the disease."   This physician also states that head and nervous symptoms preponderated in the higher classes and in persons in comfortable circumstances ; but Drs. Cuppaidge and O'Connell agree that in their practice the type of the fever was alike in all classes.   The epidemic was characterized especially by the marked debility which was present throughout. No purpuric spots were observed. Dr. Cuppaidge frequently remarked the occurrence of crisis, epistaxis and diarrhœa being the usual critical phenomena. Dr. O'Farrell states that it was very uncommon, except in the five or seven-day fever, when it occurred with a violent rigor ending in profuse perspiration ; while Dr. O'Connell says that he never saw what is properly called crisis occur.

Galway.—The evidence as to the contagion of the fever in this county was very decided. " Amongst the better classes the fever commenced with well-marked symptoms of an inflammatory, sometimes terminating in those of a typhoid character, ac-

(*a*) **Dr. Nash, Drumkeerin.**   (*b*) **Dr. Munns.**

companied by petechiæ, &c. But among the poorer classes the whole character of the disease was asthenic, whether simple, continued, or typhoid"(a). " In the upper classes the tendency to sinking was much more decided. In those cases which followed starvation the type was much lower, with a great tendency to putrefaction"(b); the typhoid symptoms setting in at an early period, seldom later than from the seventh to the ninth day. Dr. Hynes states that his experience does not enable him to point out any difference between the recent epidemic and those of former years, but that he has observed a decided difference in the duration, symptoms, and liability to relapse in this epidemic in the years 1847 and 1848; the cases in the former year were of shorter duration, and more liable to relapse. Dr. Kearns is of opinion that the recent epidemic was characterized by its low character, and the head being much less engaged. Purpuric spots were very common, "in ten cases out of twelve at least"(b). Diaphoresis was the most usual critical phenomenon. Diarrhœa and epistaxis occurred more rarely.

In the Connemara district Dr. Suffield says:

" There was abundant evidence that the disease was highly contagious. At the commencement of the epidemic those attacked were at the time generally in good health; but as the disease advanced almost all the cases that presented themselves were in those who had been and were suffering from privation and want. The lower orders were chiefly attacked, but the higher class suffered materially. The only difference I could observe was, that in the former class the fever ran more rapidly to a fatal termination than in the latter. From the eighth to the tenth day well-marked typhoid symptoms set in. Dysentery, with but few exceptions, preceded, accompanied, or followed the fever. I did not observe one case in which scurvy or purpura appeared either before or during the disorder.

(a) **Dr. Hynes.**   (b) **Dr. Davis.**

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There was no disease in cattle at the same time or previous to the epidemic. I have seldom witnessed a death from a relapse. Purpuric spots were not common. Petechiæ occasionally appeared in relapses when they did not occur in the primary fever."

Third Class of Queries.— Complications.

Sligo.—In the lower classes dysentery preceded, accompanied, and followed the fever. Local complications in any form were rare. Relapses occurred frequently, but no difference is noticed between the primary and relapsed cases, except that maculæ appeared in the relapse, when they did not occur in the primary fever. Epistaxis was common in the early stages. Dr. Lynn reports that bed-sores were not so frequent as in other epidemics.

Leitrim.—Dysentery frequently preceded, accompanied, and followed the fever; Dr. Nash states that it was most common as a sequela, causing death. In this physician's practice chest affections were the most frequent complication, but Dr. Munns found head complications more common, although pectoral and abdominal were also met with by him. Relapses were very frequent, in some cases recurring more than once. Petechiæ did not appear in the primary fever. Epistaxis was not frequent, occurring principally among young persons, and early in the disease. " Bed-sores were very frequent, and inclined to slough"(*a*).

Roscommon.—Dysentery was present before and after the fever, and sometimes as a complication; Dr. Cuppaidge found it most frequently to precede the disease; Dr. O'Farrell writes " that it invariably followed fever occurring in persons who had previously suffered from starvation, and was almost invariably fatal." The most frequent local complications were those of the chest and bowels. Relapses occurred very frequently, the chief difference noted between the primary and relapsed cases being that the latter were of a worse type. Pe-

(*a*) **Dr. Nash.**

techiæ often appeared in relapse, but did not occur in the primary fever. Dr. O'Farrell reports that epistaxis was very frequent and severe, in two cases requiring plugging the posterior nares; it occurred early in the disease. Bed-sores were rare.

Galway.—In this county dysentery most frequently followed the fever, but it also preceded and accompanied it. Abdominal complications were the most general, and next to them pectoral. Relapses were very frequent, sometimes recurring two or three times, the relapsed cases presenting generally more typhoid symptoms, " and were almost generally attended with rheumatic pains of the joints"(*a*). In Kinvarra petechiæ frequently appeared in relapse, while they did not occur in the primary fever; but such does not seem to have been the case elsewhere. Epistaxis does not appear to have been very frequent; Dr. Davis mentions that he had two cases, in both of which it appeared in the relapse. Enlargement of the spleen was not observed. Bed-sores were very infrequent.

Fourth Class of Queries,—including the Mortality and morbid Appearances.

Sligo.—Mortality was greater in the upper classes and in males. " There was nothing remarkable noticed in the *post mortem* appearances, except when dysentery preceded or followed the fever."(*b*) We have been unable to obtain any information as to the proportion of mortality among those attended at their own houses or in hospitals, or between the inhabitants of densely populated places and the thinly populated rural districts.

Leitrim.—The fever was most fatal to persons in the higher classes, and especially among persons advanced in life. With regard to morbid appearances, examinations after death were not frequently made; Dr. Nash states that the only remarkable appearances he met with were " effusion into the ventri-

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(*a*) Dr. Kearns, Ahascragh.　　　　(*b*) Dr. Lynn.

cles, and inflammation of the membranes of the spine." There was a greater per centage of mortality among those attended at their own houses than in hospitals·

Roscommon.—The mortality was much greater among the higher classes than the poor, " amounting to about forty per cent. in the former, and not more than about four per cent. in the latter"(*a*). No *post mortem* examinations appear to have been made. The mortality was much greater among those attended at their own houses than in hospitals; "it was as marked in the thinly populated rural districts as in densely inhabited places"(*b*).

Galway.—Most of the reports from this county agree that the mortality was greater among the most destitute; but Dr. Kearns states that it amounted, " in the poorer classes, generally to from six to eight per cent. ; in the middle or more comfortable classes it was much less; but in the upper classes it was much higher." No *post mortem* examinations were made. The mortality was much greater among those attended at their own houses than in hospitals. It was also much greater in towns and densely populated districts than in thinly inhabited country places; but Dr. Davis mentions that in one large mountain district in his neighbourhood, previously to the opening of the temporary fever hospital, the mortality was greater than he had elsewhere witnessed.

Fifth, Sixth, and Seventh Classes of Queries,—relating to the Duration of the Disease, Modifications, and Sequelæ.

Sligo.—The duration of the disease varied much at different periods of the epidemic; those primary cases which were subsequently followed by relapse, were always of short duration. Among the remarkable modifications of the symptoms, in individuals of the same family, placed under similar circumstances, Dr. Lynn makes the singular remark, that "the head

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(*a*) Dr. O'Farrell.   (*b*) Dr. O'Connell, Athlone.

of the house generally died, but the other members never."
Much diversity of symptoms was noticed amongst members of
the same family, who had contracted fever from the same cause.
The most usual sequela of the disease was dysentery.

Leitrim.—The usual duration of the fever was from four-
teen to twenty-one days, and the convalescence was very pro-
longed; where relapse occurred the fever was in general more
tedious. No remarkable modification is noticed as having oc-
curred in members of the same family. Dysentery was the
most usual sequela.

Roscommon.—The usual duration of the disease was from
eleven days to three weeks, and the length of the convales-
cence generally a fortnight, sometimes prolonged to a month.
" Cases of fever, with well-marked crisis on the fifth or seventh
day, without a single exception, relapsed; those cases of fever
were generally non-petechial"(*a*). Dysentery, anasarca, and
swelling of the lower extremities, were the most usual sequelæ.

Galway.—The usual duration of the disease was about a
fortnight, in some few cases it lasted for twenty-one days: " If
the crisis was prolonged beyond fifteen days the case generally
ended fatally"(*b*). Convalescence was in nearly every instance
tedious and protracted; the milder and shorter the primary at-
tack was, the more liable was the patient to relapse. The only
modification of symptoms noticed, as occurring in members of
the same family, was, that the disease was milder in the young
than in the old. Dysentery, dropsical effusions, and rheumatic
pains, and phthisis (in some few cases), were the most frequent
sequelæ.

Eighth Class of Queries,—referring to the Treatment.

Sligo.—As elsewhere in our reports, a stimulating and sup-
porting plan of treatment was here also found most serviceable.
Wine and other stimulants were used freely, while bleeding in
ny form was seldom employed. In cases of great wakefulness

(*a*) Dr. O'Farrell. (*b*) Dr. Suffield, Clifden.

opium was found very useful; to use the words of Dr. Lynn, " it sometimes turned the scale."

Leitrim.—" On the first invasion," writes Dr. Munns of Carrick-on-Shannon, " I found cold affusion particularly serviceable, in fact, so much so as to cut short several cases. This was followed by an emetic, and attention paid to the various secretions. In severe complications, particularly of the head, I found leeching and counter-irritation very useful." In other districts of this county an expectant plan of treatment seems to have been chiefly employed, the strength having been judiciously supported by nutritious diet. Stimulants seem generally to have been freely employed, with good effect; yet blood-letting, both local and general, was also had recourse to, especially by Dr. Munns, who states that he employed it in the first stages, especially in the young and plethoric, when the eyes were much suffused and the countenance flushed. Bleeding by leeches was chiefly resorted to in local complications. Mercury was only had recourse to as an alternative. " Opium, combined with tartar emetic, as recommended by Dr. Graves, was used with excellent results in cases attended with delirium and restlessness"(*a*).

Roscommon.—A stimulant plan of treatment was generally employed, and found most serviceable: "A little wine, beef tea, and carbonate of ammonia"(*b*). Wine was very freely employed, and, where it could not be procured, whisky-punch. Neither local nor general bleeding seem to have been resorted to, except in very few cases, and then only in the form of leeching. Mercury was very seldom used, except in cases of dysenteric complication, or as an occasional aperient. When pneumonia occurred, Dr. O'Farrell administered it with good effect. Opium was only employed in the advanced stages of the disease, either when diarrhœa or dysentery set in, or when nervous symptoms prevailed.

(*a*) Dr. Nash. (*b*) Dr. O'Connell.

Galway.—The supporting and stimulant plan of treatment was also generally resorted to in this county. Dr. Davis used cold affusion in the commencement of sthenic cases, followed by active purgatives; but towards the end of the disease he had recourse to blisters, sinapisms, cordials, and stimulants. Stimulants were generally used, both wine and spirits. General bleeding does not seem to have been employed, except in very few instances. Local depletion was used occasionally, when any important organ was engaged. Both mercury and opium were administered in cases attended with diarrhœa or dysentery. The latter was also given with excellent effect in cases attended with great nervous excitement and want of rest. " The treatment employed consisted in the administration of mild aperients in the commencement, and the use of tonics and stimulants at an early stage of the disease. Bleeding had a decidedly injurious effect, and was seldom employed. Blisters acted beneficially. Mercury, in the form of hydrargyrum cum cretâ, was used with much benefit, as also opium.   Wine was given only occasionally in hospital, its place having been supplied by good porter containing a small quantity of spirits"(*a*).

Summary of Reports not comprised in the foregoing Details.

We have not received any reports from Sligo; but Dr. Dillon, of Castlebar, county Mayo, writes :

" In March, 1847, our county gaol was crowded to more than double its capability ; those committed being in a state of nudity, filth, and starvation.   The prison hospital, calculated to hold sixteen patients, had, early in March, eight cases of low typhus. From the character of the fever, the condition of the prisoners, and the fearfully crowded state of the gaol, I clearly saw we must before long have a full visitation of bad typhus, and accordingly applied, through the proper authority, for immediate and further hospital accommodations.   The high sheriff and governor, however, took upon themselves to offer a

(*a*) Dr. Suffield.

different opinion, and declared there were no grounds for alarm. A few weeks, however, proved their ignorance, for by the end of April we were in a state of actual pestilence; in the hospital the unfortunate sufferers were heaped together, several buildings in the prison, from necessity, containing more or less fever cases. Before temporary sheds could be erected,—and they were got up with much expedition,—we had fully one-fifth of the inmates in bad maculated typhus. Our Roman Catholic chaplain, deputy governor, deputy matron, and a turnkey, fell victims; *every* hospital servant was attacked; and from our wretched, over-crowded state, the mortality was fearful,—fully 40 per cent. Of the contagious character of the disease I believe I may say no more. At this period, and for some months before, fever prevailed in all quarters of the country, and not a few of those committed were inmates of the fever wards a few hours after committal. Throughout the county fever was confined chiefly to the poor, and mostly to those suffering the privations of want of food, fuel, and clothing, all of whom were in anything but a state of good health.

" The duration of the fever in the gaol was from eleven to twenty-one days; the marked typhoid symptoms sometimes appearing as early as the fifth day. Female prisoners suffered in a considerably less proportion than the males; and the mortality amongst them was not one-half, during the existence of this disease in the gaol. A mild form of continued fever was present, of from five to seven days' duration, without any cerebral disturbance; in this form relapses were frequent, deaths few; and the same has been observed to exist throughout the country, amongst the peasantry. Relapses from the typhus, with petechiæ and cerebral disturbance, did not occur in more than three instances in the gaol. Dysentery, pulmonary disease, hepatic congestion, and dropsy supervened in some cases, and insanity in one. Crisis appeared in most cases by diaphoresis, in some by increased renal secretion, and in two or three by epistaxis, the latter always occurring in young, full habits, and when local depletion had been resorted to. Early profuse

diaphoresis, unaccompanied by any mitigation of symptoms, *invariably ended fatally*, seldom later than the eleventh day, but sometimes on the fourteenth; this unfavourable symptom I have had amongst the higher class in many instances, and was never deceived in my prognosis. The late rector of West-port was one of those remarkable cases; and, within the last two months, I had another in a respectable merchant of the same town, whose fate I predicted the first day I saw him (the sixth of his illness), the medical attendant smiling at my alarm under so favourable symptoms.

" I know not whether the fact of a mild form of continued fever, existing throughout the country during the prevalence of maculated typhus, has been made known to you, or existed in other parts of the kingdom, but here it has been very evi-dent; so much so, that it was not uncommon to hear a mem-ber of a family saying, " we have been *three times down* in the fever, and have all, thank God, got through it!" On inquiry, this mild form of continued fever had been the disease. In 1848 our cases of fever in the gaol have been fewer and more mild; in fact, in either number or character, by no means re-markable; but dysentery has prevailed to a great extent: and on referring to our register, I find many of the fatal cases of dysentery in 1848 had typhus in the autumn of 1847. With reference to the dysentery prevailing in this county for the last two years, or since the introduction of Indian corn-meal as the principal food of the poor, I would say it differs mate-rially from true dysentery, or that met with in warm climates, or even in this country, and described by authors. In the first place tormina are seldom present; scybala rarely, if ever; and intestinal pain, even on hard pressure, seldom, if ever, complained of; the discharge from the bowels muco-sangui-neous, and large in quantity, and this frequently with a tole-rably clear tongue. It appears to me to be produced by the quality of the Indian meal, all of which, *ground in this country,* contains a large proportion of the husk or skin; that prepared

in America being closely sifted, and quite as pure as our best flour. In America intestinal irritation from Indian corn-meal or flour is unknown. Opiates are more called for, and give more decided relief, than in true dysentery; however, cases have become so aggravated as to require the use of mercury, blistering, and other remedies necessary to subdue the acute stages of true dysentery.

" I have little to say, worthy of interest, on the treatment of the typhus that has existed amongst us for the last two years, save that depletion could seldom be borne in any form; leeches occasionally to the head might be of service, but venesection, I am satisfied, was wholly inadmissible. In two or more cases, where it had been resorted to by inexperienced persons, much mischief was done. Early stimulation, with wine, &c., was, in most cases of typhus that I saw, necessary, and counter-irritation in all was had recourse to."

Dr. Pemberton, of Ballinrobe, has afforded us the following testimony :

" In compliance with your Circular of Queries respecting the epidemic fever which visited our unhappy country during the past and present year (1848), for it is still lurking, I am sorry to say, in the country, I will endeavour to answer them as nearly as possible in the rotation in which they are put. I may state, in the first place, that it has been very prevalent in my neighbourhood, as there was not a village and scarcely a cabin in this district that escaped its desolating influence. I have often seen whole families, consisting of seven or eight individuals, lying in the fever at the same time, with perhaps a child of eight or nine years of age the anxious nurse-tender of its father, mother, and from four to six brothers and sisters,— ministering to them the cool water of the spring (having nothing else) to quench their burning thirst; the child itself scarce able to walk from starvation, or having just risen from the bed of sickness to tend those dear objects of its affections. The people were completely prostrated by the disease, which was in

very many instances protracted to an indefinite period, for the want of that nourishment and care suitable to their convalescence; or, during the progress of their recovery, having nothing else but Indian meal to satisfy the cravings of hunger, and water to quench their thirst, taking the former in too large a quantity, when relapse after relapse occurred : and months in some instances passed away before the disease left their threshold, having brought many victims along with it.

" The district was not healthy previous to the outbreak of the epidemic, as scurvy was very prevalent for some months before, evidenced by the purple hue of the gums, with ulceration along their upper thin margins, bleeding on the slightest touch, and deep and sloughing ulcers of the inside of the fauces, with intolerable fetor, which attacked both sexes indiscriminately, and the child as well as the adult, but unattended with purpuric spots, or other discoloration of skin, in all the cases I saw, except one child, about two years of age, that had purpuric spots on its face, trunk, and extremities. Dysentery also prevailed to a great extent, which I attributed to their eating the diseased potato in the first instance, and then the sudden transition to the Indian meal, which they did not know how to cook ; and many of them I have seen devouring it raw, from hunger, not having tasted food for some days previous to their obtaining it. I have no doubt also but the diseased potato brought on the scurvy.

" The epidemic fever which commenced in the workhouse of this union (Ballinrobe) the latter end of February, 1847, was brought into it by a strolling mendicant from a distant locality, who sought and obtained shelter there with fever on him, and where he died in a few days. This fever spread rapidly amongst the inmates of the workhouse, who were fully prepared to receive the infection, from the filthy state of the house, yards, and sewerage, and also from the number of human beings—men, women, and children—that were huddled together in the same rooms (the probationary wards), eating, drinking,

cooking, and sleeping in the same apartment, in their clothes, without even straw to lie on, or a blanket to cover them. All the officers of the establishment were simultaneously attacked by it in its most virulent form. The physician, master, matron, Roman Catholic chaplain, and clerk, were lying in the disease at the same time; the physician, master, and clerk dying of it; I think we have evidence in this instance alone of its contagious character; not to speak of the number of medical gentlemen who have fallen victims to the disease, caught in the discharge of their onerous duties, besides Protestant and Roman Catholic clergymen, who necessarily had to come in contact with those labouring under it. I could adduce numberless instances to prove its contagious character, if necessary, but I believe the number is few who do not admit such to be the case just now.

" Of the number of respectable persons who were attacked with the fever, I have not seen one who did not state that they had been in good health previously; but amongst the poor I have no doubt that insufficient and unwholesome food were the great predisposing causes to the disease, along with their filthy and unventilated cabins, and there being no provision made before the outbreak of the fever for separating the healthy from the sick. The higher classes of society who were attacked by the fever ascribed it to their attendance in some crowded assembly, either while presiding as magistrates in petty sessions courts, sitting on relief committees, or attending as jurors in assize towns, in which places they necessarily came in contact with large assemblies of the poor, from whose bodies and clothes issued the most offensive odours. The mortality amongst the better classes of society was truly great, six or seven out of every ten attacked dying of it; while, amongst the poor who got any care at all, not more than one out of every four or five attacked was carried off by it.

" The first symptoms complained of were a chilliness and a wish to be at the fire, or a severe rigor, accompanied by pain in the head, of a dull aching character; sometimes intense pains

in the loins and lower extremities, lassitude and great prostra-
tion of strength, with furred tongue, quick pulse, and a hot
skin, suffusion of the eyes, and flushed countenance. After a
few days, delirium set in, with constant talking, of a low, mut-
tering kind; but in some cases, especially in the higher ranks
of society, the talking was loud and boisterous, and they would
get out of bed, unless prevented. In almost every case pete-
chiæ were present. In some you had to examine closely for
them on the chest, back, or abdomen, while others were co-
vered from head to feet, with spots as large as a four-penny
piece, of a dark colour, almost verging to black, while in others
they were of a bright vermilion hue. They generally appeared
from the second to the fifth day in the higher circles of society,
so that they were always more seriously and fatally attacked
from the commencement of the disease than those of the lower
classes who had suffered in any manner from want of food.
Death ensued in almost every instance from cerebral symptoms.

" I regret I had no opportunity of making any *post mortem*
examinations, from the great antipathy of all classes of society
to such inspections, but I witnessed, through the kindness of my
friend, Dr. Beckwith (assistant-surgeon of the 49th Regiment,
then quartered here), the *post mortem* of two or three soldiers
who died of the disease, and in each instance found the vessels of
the brain filled with dark fluid blood, the sinuses also, and a
quantity of fluid blood extravasated at the base of the brain; all
the other viscera healthy, except in one case (where jaundice oc-
curred a short time before death); the liver was of a pale yellow
colour throughout its entire substance. Deafness occurred in
every case. Bronchitis and diarrhœa, sometimes occurred early,
but most frequently at the latter stage of the disease. Reten-
tion of urine, epistaxis, hematemesis, and uterine hemorrhage
occurred frequently throughout the progress of the disease,
generally towards the latter stages of it, and which, if not
promptly relieved or checked, carried off the patients, already
debilitated by the fever. I do not think there was any great

difference in the number of males and females attacked, but of
the two I would say the latter prevailed, but think more males
fell victims than females.

" The duration of the disease was generally from thirteen to
fifteen days; sometimes it was prolonged to eighteen and twenty-
one days, at the outbreak of the epidemic; but in that form of
fever properly called the relapse fever, which did not occur
until towards the latter part of the year, crisis came on, by pro-
fuse perspiration, from the seventh to the ninth day, lasting two
and three days.   However, in the true maculated fever, there
was very seldom what might be called crisis at all; the pulse
fell, the skin became more soft and pliant, with slight tendency
to moisture; a copious secretion of pale urine, and tendency
to sleep, were sure forerunners of amendment.   Where the
patient was completely prostrated by the disease, and covered
with petechiæ of a dark colour, the sounds of the heart were
very feeble, with an intermittent pulse; indeed, in one case, I
recollect, the pulse intermitted at every third stroke, and con-
tinued so for several days (notwithstanding the free exhibition
of wine and ammonia), until towards the termination of the
fever, when the intermission became less frequent, and gra-
dually lessened, until convalescence was fully established,
which, in every case, was very slow.

" In the relapse fever which occurred in the autumn and
winter months of last year, the patients were attacked with
rheumatic pains in the back and joints, chiefly the ankle-joints,
of an intense character, causing them to cry out whenever
they had occasion to stir in bed; and I have lately seen a man
(who had this form of fever last year) with paralysis of his left
arm, and was slowly getting the use of his right, from a similar
affection; he positively states he was only five days ill. Sick-
ness of stomach and vomiting were also attendants on this sort
of fever, nothing resting on their stomachs but water, effer-
vescing draughts, or small quantities of port wine.   In one
case of it I had under my care, the stomach and bowels alter-

nated, in a most extraordinary manner, with each other, after the subsidence of the fever. A female of very delicate constitution was attacked with mild fever, which lasted a fortnight; during convalescence diarrhœa set in, which continued for a week or ten days. On its ceasing, vomiting began, her stomach rejecting everything except small quantities of port wine. When the stomach became settled, diarrhœa again attacked her; when it was stopped, her stomach again rejected everything; and so on, this alternation continued for months, until she was reduced to the merest skeleton. Suddenly both ceased altogether; she got finally well, and continues so. The treatment of this form of fever was very simple, consisting of diaphoretics, laxatives, and, when there was any tendency to insomnolency, opiates; when rheumatism occurred, liniments to the affected parts, with quina and colchicum, were employed.

" In the severer forms of fever (the true maculated typhus), where there was great cerebral excitement, with delirium, shaving the head, blisters to the scalp and nape of the neck, dressed with mercurial and tartar emetic ointment, thus establishing a good discharge from the blistered surfaces, the internal administration of mercury, and even the mercurial ointment, rubbed in so as to bring the constitution under its influence, were employed. This latter was very rarely the case, indeed; but, when the symptoms were about to yield, the gums have sometimes become swelled, and a mercurial fetor was perceptible on the breath; ptyalism has occurred, but not until convalescence had taken place, and then never profusely. I have no doubt but that I have saved many persons by this treatment, who otherwise must have perished; but once the mercury laid hold on the constitution the symptoms gave way, and recovery was certain. I have not used blood-letting, either locally or generally, in my practice; except in one case where I applied four leeches to the epigastrium. In that instance, where there was great tenderness and vomiting, their application induced so much weakness, although little blood was lost, that it de-

terred me from trying it again; and those cases which were submitted to either general or local bleeding, previous to my seeing them, invariably terminated fatally. I only knew of one case to recover, so great and fatal was the prostration that ensued after the loss of even a few ounces of blood(*a*). Stimulants were used internally and externally; and I have derived the most signal and unhoped-for benefit from the use of tartar emetic and opium, as recommended by Dr. Graves, in the latter stages of the disease. The same good result has been generally experienced by the medical men in my locality, who have tried its effects.

" I would say the towns exhibited a greater amount of mortality than the thinly populated districts; and there was a greater per centage of deaths among those attended in their own houses than in hospital, from the want of cleanliness, free ventilation, proper nourishment, and strict attention in administering the remedies ordered."

Dr. Alexander Fry, who treated the fever in two of the islands on the west coast of Galway, has furnished us with a voluminous report, from which we make the following extracts:

" Early in the month of August, 1848, I received an appointment, as medical officer under the Central Board of Health, to take charge of the district of Innis Boffin(*b*) and Innis Sark, where diarrhœa, dysentery, and fever prevailed at the time, and had existed for some weeks previously.

" These islands are the two most remote off the western

(*a*) [A remarkable instance of this occurred in the town of Ballinrobe. The late Dr. Hamilton was a noted Broussaist ; he bled himself largely immediately on taking the fever. Finding himself getting worse about the sixth day, he sent for a neighbouring practitioner to bleed him again. On his refusing, he procured a " bleeder" who complied with his request. The unfortunate gentleman died before the following day.—ED.].

(*b*) [Boffin Island belongs to the county Mayo, but as it is opposite the Galway shore, and should, geographically speaking, be included in the same report with Sark or Shark Island, it is here given along with the Galway return.—ED.]

coast of Ireland, and are separated from the mainland of Galway by the bays of Claggan and Ballinakil, a distance of about eight or ten miles. Their situation is most attractive, and the scenery around is grand and picturesque.

" These distant isles of the west are, for the most part, uncultivated, being composed of extensive rocky hills, with bogs and a few small loughs interspersed; yet many parts of them, especially of Boffin, present good pasturage and some good tillage, and there is much more land capable of being reclaimed; the mountainous parts afford grazing for sheep and black cattle. The cultivation, which is in the valleys and up the sides of the mountains, on their south-east aspect, consists chiefly of potatoes, barley, and oats. The potato crop, on which the chief subsistence of the islanders depended for the last two years, inasmuch as the fish had ceased to frequent their coast, had utterly failed the last season; and the consequence was severe distress and starvation, followed by fever and dysentery, which proved very fatal during the months of June and July.

" The island of Boffin, by much the larger of the two, and nearer to the mainland, contains a population of about 1600 inhabitants, who live chiefly by fishing; they are lazy, indolent, and superstitious, and yet—though it may appear paradoxical— they are a hardy, expert, and enduring race of fishermen, for fishing seems to be their proper calling.

" On my arrival in this district I found that the epidemic had extended itself over both islands, and that there had been many deaths during the two previous months. I may mention that in the very first cabin I entered, after landing, I found the mother of the family lying dead on some straw, and was informed that her son, a boy of 15, had been buried that morning. The interior of the cabin was most wretched, without pot, kettle, or any of the utensils which are commonly met with in an Irish cabin, with only some straw, on which the miserable inmates stretched themselves, and which was their only bed and bed-

ding. This was no solitary instance, for many such cases presented themselves to me before I left the island.

" I found the number of fever cases, in both islands, to be about 100, with many cases of dysentery and diarrhœa. I began at once to do what, under the circumstances in which I was placed, appeared to me to be best, and what the necessity of the case demanded. I bought up all the milk I could get, and distributed it among the sick, most of whom had nothing to drink but water; and after a few days I was enabled to allow my patients a little rice, in addition to the milk, through the generosity of the Friends' Central Committee, who, with their wonted liberality, forwarded me a cargo of rice, on my communicating to them the state of want and destitution of the sick in the district. A dispensary and temporary fever hospital were next fitted up, by which means the progress of the epidemic was arrested, and, finally, got under completely in three months.

" I was unable to ascertain the particular period at which the epidemic had commenced in this district, but it had prevailed, for at least two months, previous to my arrival, and had proved very fatal. The cause of so many falling victims to it, at its commencement, arose not only from the miserable state of destitution and want the people were in, but from the improper mode of treating it adopted by the relatives of the sick, chiefly arising out of their superstitions.

" When the hospital was first opened, I had numerous enemies to encounter, and many difficulties to be overcome, owing to the ' fairy doctors,' and the ignorance and superstitions of the people. However, after some time, when they saw the patients whom I had in hospital recovering, and some, who could not be persuaded to come into hospital, dying, their prejudices gave way, and they began no longer to look upon me as a dangerous emissary from the Government.

" The inhabitants of those islands dwell in villages, which have either a southerly or an easterly aspect, and of which

there are six in Innis Boffin. The number of houses or cabins in each village is from forty to sixty. The fever prevailed in all of them, but in some much more than others. This could be readily accounted for, as the village where filth and want of cleanliness prevailed, with foul, stagnant pools immediately before the doors of every cabin (for each cabin has two doors, a front and back, so that they can shut or open either, according as the wind blows), suffered much more from the epidemic than those where more attention was paid to cleanliness.

" It is worthy of notice that the epidemic fever appeared here so much later than in Dublin, or in other places on the mainland. This was also the case when the pestilential cholera visited this country in 1831–2; I was informed that it did not reach the island of Boffin till 1834, and then it only got into one village, and proved fatal to about a dozen persons; which, as soon as the people saw, they were struck with such panic, that they all, men, women, and children, abandoned their houses, and fled to the mountains; the result was, that the cholera at once suspended its ravages. No more deaths occurred.

" The epidemic, as I saw it in this district, showed itself in its distinct and peculiar character. It could not be easily confounded with typhus fever; the symptoms were altogether so dissimilar, and the termination also so different,—as it was generally in recovery,—when properly treated the proportion of deaths being one in 100 of those cases I had under my care.

" The evidence in favour of contagion was most conclusive. When any one individual of a family got the fever, and was not immediately removed to hospital, in a few days every member of the family was attacked; and, on the other hand, where separation of the sick from the healthy was attended to at once, the disease was arrested. I saw some very striking instances of this. In one case, a boy of eleven years old was removed to hospital, and after twelve days, not being entirely recovered from a relapse, he got out of hospital and went home

to his family, six in number; the result was, every one of them took the fever. In another case, an old man of 69, who had been removed to hospital on his being seized with fever, and who, when recovering from a third relapse, was taken away by force by his wife, who entered the hospital in spite of the nurses, and literally dragged the poor old man, worn down with sickness, out of his bed, and made him walk nearly a mile to his own house. The result in this case also was, that the wife and five children, the entire family, were attacked by the disease.

" The inhabitants of those islands are, with the exception of three or four families of the middling class of society, all of the lowest grade, so that I had but one class to treat, while I might say I had grades in that class, who were differently affected by the disease. Those who had been suffering from want and starvation (and they were the great majority of those who were seized by the epidemic) had a low fever which scarcely deserved the name, and which presented some peculiarities. It commenced with cold and shiverings, headach, pains in the limbs, thirst, hot dry skin, white tongue, as if covered over with magnesia; pulse accelerated, weak, and feeble. These symptoms continued from five to seven days, when the fever terminated, apparently by diaphoresis, and in many instances without any well-marked critical phenomena. The patient continued in this state generally from three to five days, with great craving for food; and no matter what plan of treatment was adopted, full or low diet, or whatever course was pursued, relapse was sure then to follow in almost every case. This was a very peculiar feature of the disease. The primary fever in many cases was so slight that they walked or rather staggered about with it, and would not come into hospital, but after three or four days the fever returned with much more intensity than at first, accompanied, in severe cases, by gastric or gastro-enteric derangement, which was followed by great prostration of strength.

The relapse, as well as being more severe, was also of much longer duration than the primary fever. After continuing from seven to fourteen days, it generally terminated by sweating. There were other critical phenomena, as diarrhœa and epistaxis, and in females the appearance of the catamenia; but these, with the exception of the last, were rare. The period of convalescence varied from one to three weeks.

" In the grade that had not suffered from want of food, and but few comprised this class, I observed the fever had a greater tendency to assume a typhoid character. Petechiæ appeared in a few cases of this kind, but were by no means common; and dysentery or diarrhœa frequently came on towards the end of the fever.

" All ages, from the child on the breast to the old man of 70 on his staff, were attacked by the epidemic fever. Males were not more liable to be affected by the disease than females. At first, on the outbreak of the fever, more men were attacked by it than women, but towards its termination the number of females preponderated. Young persons were more susceptible of the disease than the aged, and those chiefly attacked were individuals from ten to thirty years of age.

" A very remarkable feature in the epidemic fever, as it appeared in those islands, and one which attracted my attention as being peculiar, as I did not witness it to the same extent in other districts was, the immunity from affections of the brain and thoracic viscera. Bed-sores, too, were very infrequent, but abdominal complications were common. Whether these peculiarities depended upon the causation of the disease, the race, the climate, or the particular season of the year, I will not take upon myself to determine.

" As to the pathological condition of the glandular viscera of the abdomen, especially that of the spleen, enlargement of this viscus was occasionally to be met with, but it was by no means of frequent occurrence. Is this complication attendant on the fever or on the dysentery ?

" Dysentery and anasarca sometimes occurred as sequelæ, but were not frequent.   However, if by sequela is meant what follows the fever, the most usual was starvation or the work-house.   The latter was literally regarded by the famine-stricken islander as transportation, and he would often prefer the former sooner than travel forty or fifty miles to a poor-house, where he believed he was to be confined, as in a prison, to eke out a miserable existence for the remainder of his life.

" The mode of treatment was very simple : all that was necessary, in the great majority of cases, was general treatment, which consisted in attention to the bowels, the use of diaphoretics, and the moderate allowance of mild nourishment.   In no one instance did I find it necessary to have recourse to blood-letting.

" When a patient was admitted into hospital, the first thing, after having his feet, and, if necessary, his whole body washed with warm water, was to put him to bed and give him a drink of warm whey, and in an hour after, as the bowels were usually constipated, a purgative draught, usually castor oil with oil of turpentine, which generally produced its effect in the course of three or four hours.   I sometimes gave the compound powder of jalap, with calomel, in the form of bolus, which I found to answer equally as well; afterwards diaphoretics were administered; and where there was much gastric irritation, with tenderness of the epigastrium, it was relieved by a small blister or sinapism applied to the region of the stomach.

" In the relapse, particularly when typhoid symptoms came on, the usual stimulants administered were wine and whisky in the form of punch; and when there was present much depression of vital power, with hot skin, and dry parched tongue, camphor and carbonate of ammonia, with Hoffman's anodyne liquor, were found very useful.

" When dysentery supervened, I generally found it to yield to the acetate of lead and opium, three grains of the former with a quarter of a grain of the latter, in the form of pill, given every

third hour, and two table-spoonfuls of a bark mixture, given in an hour after each pill; at the same time employing hot turpentine stupes to the abdomen, and, in some few cases, opiate enemata.

" The other sequela of the fever, anasarca, recovered under the use of tonics and diuretics, with nourishing diet, and the occasional employment of a purgative when the bowels were sluggish, as was generally the case. The medicine I preferred for this purpose was the compound power of jalap with calomel."

The following is the report of Dr. Ormsbey, of Arran Island, in somewhat the same locality, off the Galway coast, received in January, 1849:

" According to your desire, I send you an account of the state of fever in this district for the last three years. I could hardly say we were ever without it, but it was by far more prevalent in the winter and spring seasons. Previously to that period the people here were quite healthy. I am fully of opinion that it is contagious, yet during the epidemic I have known cases occurring where one member of a family, and sometimes more, caught the disease, and continued in the house with the remainder of the family, without conveying it to them; but I must say such cases were very rare. With the exception of a few public officers residing in the isles, the inhabitants are all of the one rank in society, although some of them may be in more comfortable circumstances than others; therefore the fatality amongst them was equal; but from what I can learn from other quarters, rich and poor were alike attacked. The deaths in my own immediate district were about five per cent. It would be but a very reasonable conclusion to come to, that the difference of food would cause the difference in symptoms: for instance, those living on Indian meal were more liable to dysentery than those who were in the habit of using other food; yet Mr. Martin, the then Member for this county, and several other persons in respectable life, died of dysentery after fever.

" There was little or no disease among the cattle here. The younger branches of the family were generally first attacked, except when old women brought the contagion from houses where they were in the habit of visiting. In the last eighty-six cases I had, seventy-one relapses occurred; such a large number was heretofore unknown to me, and in this particular did the epidemic of last year differ widely from that of former years. There was a very remarkable difference from the common typhus; generally speaking, the symptoms increased progressively to the crisis, or what nurse-tenders call 'the cool.' In all the relapsed cases that came under my attention during the past year, the symptoms presented a mild appearance until the fourth or fifth day, when they progressively disappeared until the tenth or twelfth day, when apparently all fever was at at end. Although I endeavoured to guard against relapses by every means in my power, yet at the end of fifteen or sixteen days I found my hopes frustrated, and the disease returned in a far more virulent form than that of the primary. After the second attack from six to eight weeks passed before I could say the patient was out of danger, and in such cases the deaths were nearly double the amount of those in the primary cases. I would term crisis, in this form, when the edges of the tongue assume their wonted redness, and the brown coating disappears; the eyes recover their usual vivacity, the pulse comes to its proper standard, and the skin begins to have a moist, healthy, warm feel. Purpuric spots were rather uncommon; bed-sores were were not common here. The length of convalescence in a great measure depended on the care the patients took of themselves, and the food they used. In good habits and with proper nourishment, about three weeks generally enabled them to follow their usual business. I am fully of opinion the treatment and medicine employed must entirely depend on the constitution, habits, and mode of life of the patient. In a good healthy habit I generally commenced with an emetic of tarta-

rized antimony in very divided doses; when it had the desired effect I followed it up with a cathartic, but as it often happens that the emetic acts in both capacities, I waited a sufficient time before I gave the latter; if after this I found the skin hard and dry, I gave diaphoretics composed of camphor and antimony. Should the head be engaged I ordered cold applications, and sometimes I resorted to blistering, and so on, continuing to watch the state of the bowels and the skin; but my best efforts have often been baffled by quacks and ignorant nurse-tenders. The proportion of sick during the last year was about one to forty. We never had an hospital here of any sort, but I am sure a well-regulated one would be far preferable to letting the wretched beings lie in their own dirty cabins.

" Along the coast of Connemarra, for near thirty miles, where the villages are very small and hundreds of cabins detached, sickness and death walked hand in hand, until they nearly depopulated the whole coast, although they had the advantage of three medical men sent specially by the Board of Health, two of whom fell victims to the disease. Another criterion I will give to judge of the mortality by. During the years 1847 and 1848, four medical men died between Clifden and Galway; three between Oranmore and Athenry, a distance of about seven miles; four more between Anadown and Kilmain, making in all eleven; residing in open districts where the houses were for the most part detached; yet during that period all the medical men residing in Galway, as thronged and as filthy a town, perhaps, as any in Ireland, escaped. Change of diet made a marked change in the appearance of the peasantry, and in many cases brought on dysentery. In low fever and debilitated habits I used wine when I could procure it, and sometimes weak punch, with very good effect. When called in during the incipient stage of fever to young plethoric patients, I have bled in many cases with happy results; but I am of opinion that bleeding in any stage of fever is a practice that ought to be resorted to with great caution and discretion. I am not in the habit of

using any preparation of mercury, except calomel, and that in the manner I mentioned before, and sometimes combined with antimonial powder. Respecting the use of opium; in laxative habits I have used it with good effect, where the head was not engaged, and in such habits I prefer Dover's Powder as a diaphoretic to antimonials, but, like the lancet, it should be used with skill and great caution."

Dr. Turner, of Tuam, county Galway, writes:

" In reply to your queries, I beg to state that this locality was visited by the late epidemic of fever, in the latter end of March and beginning of April, 1847; and which arrived at its severest point in the latter end of June and beginning of July; the neighbourhood having been previously much as usual in regard to health.

" I have no hesitation in pronouncing it to have been contagious. It attacked the healthy and delicate indiscriminately, but chiefly the lower classes. When it did, however, attack the higher classes, it was much more fatal, and attended with greater relative prostration through its entire course.

" It was a frequent consequence of want of food, and was then much more unmanageable and liable to relapse; it varied much in its period of accession, and was frequently preceded or accompanied by dysentery ; and all those cases generally terminated fatally.

" Purpura was a late symptom, and not very frequent; gastric affections were the most frequent complication; next in order were pulmonary ; and lastly cerebral,—the last rarely appearing except in the latter stages of the affection.

" I think females were more liable to this fever than the males, who, in their turn, were more liable to dysenteric affections, which prevailed very much about the same time. Indeed these ought to be classed as different types of the epidemic.

" Ten days was about the duration of the attack ; any cases that did not run to that length were liable to relapse ; and the secondary was always more severe than the primary attack,

and more generally attended with maculæ, petechiæ, or purpura.

" The symptoms presented little diversity except as to severity, and marked crisis was uncommon; where it did occur, perspiration or diarrhœa were the usual forms it took.

" The tendency to bed-sores was very great in the relapsed cases, and they were unmanageable and inclined to spread. In many cases cancrum oris suddenly set in and destroyed the lips.

" In all cases convalescence was very gradual, and accompanied by great debility, pains in the joints, and eruptive disease of the skin, in many.

" The treatment I found most serviceable was a stimulating and nutritive one;—broths, rice, arrow-root, and port wine, quina, camphor, and opium (especially where the tendency to cancrum oris or to bed-sores existed), in conjunction with carbonate of ammonia. In no case had I recourse to bloodletting in any form, except in the application of two or three leeches at the commencement of cancrum oris, which I invariably found of great service. I found great benefit from the administration of hydrargyrum cum cretâ, in combination with dried soda, where the tendency to diarrhœa prevailed and in the pulmonary complications; blisters repeated frequently were of great benefit.

" The mortality was far greater, in my opinion, in towns than in the rural districts, and out of hospital than in it; but I cannot give any decided grounds for coming to that conclusion, as many people died without having applied for medical relief at all, and of those who did, many never applied a second time, or were totally lost sight of.

" There were 836 cases treated in the Tuam Union Workhouse Hospital, for the half-year ending 29th September, 1847, which embraces that period during which the epidemic raged. Of these forty-five died; but I must observe that many of those cases came into hospital in such a state, from starvation and disease, as to preclude all hope of recovery."

Dr. French, of Ballygar, near Ahascragh, county of Galway, informs us:

" The sanitary state of this district previous to spring, 1846, had been better than for many years previously. Shortly after the potatoes had ceased to be an article of diet, purpura or acute scurvy first attacked the poor. I observed it on the mucous membrane of the mouth, in white blisters, in some running on to sloughing, and affecting the throat and tonsils: so general was it that I entered it as an epidemic of the season in my report of the Ballygar Dispensary. Purpuric eruptions soon followed, being very prevalent in June and July, 1846, characterized by livid spots on the hands, face, chest, and other parts of the body, and in many attended with hemorrhage from the bowels. Diarrhœa and dysentery followed extensively, either as an idiopathic affection or as a sequela of purpura, attended in their advanced state with general anasarca and debility.

" Such was the state of this neighbourhood when the epidemic appeared. The fever at first was very fatal which attacked the feeble, half-starving creatures, and assumed a typhoid character, recognised by great prostration of strength, quick pulse, tongue parched and of a yellow colour, eyes sunk, and the lids stuck together by a tenacious secretion; there were also cerebral affections.

" We also had a fever of a milder form, which was fast propagated by contagion, and not so fatal; but I have on record as many as eight and nine in one house ill at the same time. The symptoms at first were those of a mild continued fever, subject to relapses, and in many attended with a maculated eruption. In some cases, on the eruption disappearing, delirium (such as recorded by Dr. Graves) set in, but soon, under the mode of treatment he recommends, recovered. The fever, in a few cases, terminated in convulsions, coma, and death; in others a favourable crisis commenced, as soon as the ninth, eleventh, or thirteenth day by perspiration, diarrhœa, or epistaxis. There were but few of the latter, and they were all young persons.

"The relapses were not alike in all. We had sometimes an aggravation of the first symptoms: in others typhoid fever set in, with violent head affections. We continued thus till the winter and spring of 1847; when, as soon as the vegetable kingdom afforded a mixed diet, the general health improved, fever and bowel affections were not so frequent, and the healthy state of the district improved much: but on the return of winter and spring, in 1848, fever of a typhoid nature increased, with well-marked petechiæ, and we recognised it as the fever of former times (that is previous to the year 1846) so that I would call it the maculated fever caused by bad and unwholesome food, or the effects of starvation, and typhus with petechiæ, the fever natural to this climate.

"The visitation was very severe in this district. The poor were badly prepared for the change in diet; nurses lost their breast milk, so that infants and the aged and infirm soon fell victims to the disease. The crowding together of the poor for relief had a tendency to spread contagion, as there was an offensive effluvia from the bodies of some who were suffering from bowel complaints. We had no hospital accommodation, but a temporary shed was built for the destitute, calculated to hold six or eight, without any provision for the sick in it. I myself had an attack of typhus, from which I recovered with difficulty, and continued three months in a very delicate state.

"To lower the system by venesection was not considered necessary in the simple continued fever, as indicated by flushed countenance, strong pulse, and white tongue. The treatment was, mild purgatives with diaphoretics at first, which were varied according to the symptoms. In the latter stage support was necessary; stimulants, beef tea, and wine, were then ordered. But in typhus, mercury, either the grey powder or calomel, was given in small doses, so as to affect the system. Shaving the head, and applying cold lotions (leeching sometimes), constituted the treatment in the first stage. In the second stage, camphor, ammonia, &c., were given, followed by wine, and

beef-tea, &c., watching, and varying the treatment according to the symptoms. Opium was seldom used. If diarrhœa set in, Dover's Powder, with calomel, was given. Hot turpentine stupes, and counter-irritation, was in most of these cases of use.

" The anasarca that followed was best treated by active exercise in the open air; the administration of alkalies in full doses; keeping up a free action of the bowels, and wholesome diet. Diarrhœa and dysentery were more difficult to manage. What was considered formerly of great injury and as bad treatment, proved of vast use in some cases,—the vegetable acids. There was one case that resisted all other remedies until I gave muriate of baryta, morphia, and camphor, as recommended by Dr. Walsh."

Dr. Lynch, of Loughrea, county of Galway, has answered the questions contained in our Circular, *seriatim*, in the following extensive report:

" The late epidemic of fever has been prevalent in my neighbourhood.

" Previously to the breaking out of the epidemic in 1843-4, there was nothing remarkable in the sanitary condition of this district. During the preceding five years maculated typhus, generally terminating on the eleventh or twelfth day, and seldom followed by relapse, was more or less prevalent, and varied remarkably in severity in different years. In the year 1840 the type of fever was very bad indeed, and very many of the gentry and middle classes were cut off by it. With the exception of that year fever assumed for many years in this district the features of typhus melior, and was fatal in the proportion of about one in six amongst the better, and one in fifteen amongst the lower classes; but during the year 1846 most of the cases assumed the worst form of typhus, and few were rescued.

" The present epidemic first showed itself in the spring of 1843. About that time maculated fever suddenly disappeared

amongst the poor, and was replaced by the new epidemic con-
stitution; but it was not preceded by purpura or scurvy.

" Pneumonia prevailed much amongst black cattle and
horses at the same time, and was extremely fatal.

" I cannot say exactly at what ages the greatest numbers
were attacked, but adults, and children over ten years, were
affected more generally than very young children. I never
saw an instance of maculated fever in a child under five years,
but I saw many instances of the short relapse-fever in children
under that age. Females were more liable to the disease than
males.

" I consider the disease to be, like typhus, a form of con-
tinued fever, and I believe that all the varieties of continued
fever, such as we see them in Ireland, and in the great towns
of England and Scotland, are contagious. I believe, however,
that although many proofs of the contagious nature of the late
epidemic were observed by me, that in the vast majority of those
persons who have suffered from it, whether in its well-marked
epidemic form, or under the form of typhus, it occurred inde-
pendently of contagion. Thus, in very many instances, persons
working in a field, and a few minutes before in perfect health,
were suddenly seized with the usual symptoms of fever, and
in a very large number of such cases I could not ascertain that
there was any exposure to contagion.

" Again, nothing was more common than for persons, while
in perfect health, to perceive a bad smell going along the road,
and immediately sickening. I knew an instance of a young man
getting his two brothers to sleep along with him for forty-eight
hours, for the purpose of dispelling the incipient rigor of fever,
and yet they both escaped. There can be no doubt, however,
but that the disease is contagious. Nothing was more common
than for a person to catch fever from cold, return home, com-
municate the disease, and infect successively a whole family.
Here the spread of the disease was clearly owing to contagion,
as, although the first person caught fever from exposure to cold,

the fevers of the rest of the family could not be traced to that or any other cause except contagion. A very remarkable case occurred to my immediate knowledge, illustrative not only of the contagion of fever, but of the identity of the poison of ordinary maculated typhus, and of the short relapse-fever, as the epidemic under consideration has been termed. A gentleman near Athenry caught maculated fever in its worst form, and died on the ninth day. The village barber, who was in the constant habit of shaving fever patients, and had not the least dread of the disease, went to shave the deceased gentleman, and sickened in the room. He went home, and died on the tenth or eleventh day of the disease. The physician in attendance, Dr. M'Calman,—who was particularly fearless, and foolishly unguarded in exposing himself to the contagion of fever, and who was consequently, so far at least, not predisposed to the disease, —got sick while administering an enema to the gentleman the day before his death, and sank on the fourteenth day, after passing through a most malignant form of typhus.

" A coachman, who had formerly been in the service of the deceased gentleman, went to his funeral, and, while acting as one of the coffin-bearers, got a shivering, and was attacked with fever, not of the maculated type, like the others, but of the type of the prevailing epidemic, that is, simple continued fever, characterized by a tendency to frequent relapses. This circumstance goes to prove the identity of the recent epidemic with ordinary typhus, as well as its contagious nature. It seemed to me, however, that, although the disease was decidedly contagious, still that contagion played only a secondary part in its propagation. It appeared to me that, in most of the cases where contagion was suspected as the cause of fever in individuals, that the sufferers were almost constantly in attendance on the sick, or else that they were exposed to contagion of a very concentrated and active description. Thus, in the instance of the persons who caught fever from the gentleman to whose case I have just alluded, the morbific

poison must have been very energetic; and in the records of Irish epidemics similar instances are not uncommon.

" In Barker and Cheyne's account of the epidemic fever in Ireland (vol. i. p. 161), an instance is given in which a number of persons, notwithstanding the greatest attention to cleanliness and ventilation, were infected by one individual, showing that, like what occurs in all other morbid poisons, the tendency to communicate fever to a healthy person is greater in some fever patients than in others, no matter what may be the type of the disease, whether mild, maculated, or, as I have observed, the remittent fever of children. The number of persons who have contracted the disease, whose duties brought them constantly in contact with fever patients, during the past year, such as physicians, clergymen, and hospital nurses, clearly shows the contagious nature of the late epidemic. But it is equally worthy of note, that most of these persons were attacked with maculated typhus, and comparatively few with the short relapse-fever, although chiefly exposed to the contagious influence of the latter form of the disease. Few of those whose duties brought them into constant contact with the sick took the disease until well dosed with the morbid poison, in consequence of frequent and long-continued attendance on fever patients. In conclusion, then, I am of opinion that, although the late epidemic was of a contagious nature, its extensive diffusion must be traced to other causes besides contagion, which, however, was, no doubt, in many instances, in operation. When proper ventilation and cleanliness is observed, when there is no marked predisposing cause, as chilled surface, fear of contagion, fatigue, or an internal conviction, which often exists, that the individual cannot escape the disease,—I think the danger of catching fever is very slight. Except in three or four cases out of many hundreds of persons affected with maculated fever, whom I have attended within the last ten years, I know of no instance where the disease was communicated among respectable families.

2 D 2

" I may mention another circumstance which illustrates the contagious nature of the late epidemic. A member of a gentleman's family in this county caught fever, no one could tell how; it was mild, and great care was taken to keep the rest of the family away from the part of the building occupied by the sick person; still, although the house was large, and every precaution made use of, several of the children fell ill successively, and as each fresh case occurred, the same precautions, as to isolation of the sick, were strictly observed. Just about the time when the last of the children attacked was convalescent, his uncle came from a distance to pay a visit, saw the child, and, although in perfect health on his arrival, fell sick almost immediately after, and had a severe fit of maculated fever. Only one of the children was maculated, although, in this particular instance, the successive attacks might be possibly traceable to the same cause which produced the disease in the first individual.

" I think it next to certain that the last person attacked, namely, the uncle, caught the disease from contagion. I have attended a good many medical men in typhus fever during the prevalence of the late epidemic, and it seemed to me that in very few instances could the contraction of the disease be fairly traceable to the influence of contagion, as, in most instances, these unfortunate gentlemen were exposed, more, perhaps, than any other class in the community, to the ordinary causes of fever, such as exposure to cold and wet, great fatigue, and unusually great mental anxiety. I think it questionable whether these gentlemen would not have caught fever under those circumstances, even if not exposed to the influence of contagion.

" I have also attended a large number of clergymen in this district, in fever, during the past epidemic, and I must say, that, in most instances, it was hardly fair to decide whether it was the influence of incessant fatigue and mental anxiety, or contagion, which caused the disease in them. I often said to

myself, when seeing such persons, and knowing how overworked they were in body and mind, and considering, too, the numbers who were struck down by fever without exposure to contagion at all, " may not these persons have caught fever from cold and fatigue, and not from contagion ?"

" When the disease assumed the maculated type, the symptoms and course of the disease in the lower and in the upper classes were pretty similar; but I remarked that those persons of the middle and upper classes, who were affected with the short relapse-fever, recovered more quickly, and did not suffer from the sequelæ of fever, as dysentery, dropsy, and other affections which shall afterwards be noticed, so much as the poor people.   I saw no instances of the short relapse-fever amongst the gentry, except in clergymen and physicians. Many of what are termed the middle classes, such as shopkeepers and small farmers, however, were under my care in the relapse-fever. All the cases of fever I have met with amongst the gentry, and they were very numerous, were instances of maculated typhus, lasting from eleven to fourteen or seventeen days before any amendment was observed.

" Most of the cases of fever supervening upon the starvation state were characterized by repeated relapses and short febrile attacks.   Dysentery and anasarca constantly co-existed with or followed such cases.   Sudden deaths were common in such patients.

" The short relapse-fever which prevailed amongst the lower and some of the middle classes, was very different from the maculated typhus, or any other form of continued fever which I had myself personally observed; but in the account of the epidemic fevers of Ireland, written by Barker and Cheyne, and also in many other reports by Irish physicians, I find that an epidemic similar to the one under consideration has frequently existed in Ireland; and I cannot see any circumstances in which the late epidemic differed from former ones, which are described in the records of Irish medical literature.

" Dysentery frequently preceded and accompanied fever.

" The stomach was the organ most frequently attacked; next the bowels; and lastly the lungs. The head too was much affected, as shall presently be seen.

" The mortality amongst the poor was about one in twelve. Amongst the middle and upper classes the mortality varied according to the type of fever. The maculated form was very fatal; one in four perished. The short relapse-fever was by no means fatal in the same rank of life, the deaths certainly not being more than one in forty.

" The remaining queries will, perhaps, be best answered by describing the symptoms of the epidemic in each of its forms, viz.: the short relapse, and the maculated form.

" The short fever began with a violent rigor, often abruptly seizing a person in perfect health ; at others after a few days of indescribable malaise, severe headach, throbbing of temples, intolerance of light and sound, suffusion of face, sleeplessness, remarkable anxiety of countenance, and jactitation, with very rapid pulse, from 110 to 120 or 140, white furred tongue, and, in the great majority of cases, constant and uncontrollable vomiting of greenish, bitter fluid, with or without epigastric tenderness, and great thirst. In many instances there was pleurodynia with short, irritative cough, the pain in the chest being very troublesome, without any stethoscopic indication of pulmonary or pleural inflammation. In others, bronchitis accompanied the outburst of the disease. After continuing in this state for six or seven days, tossing about in bed, with anxious and oppressed breathing, little and dreamy sleep, great prostration of strength, very hot skin, and ardent thirst, all the symptoms would increase for a few hours, when suddenly a profuse perspiration would break out, or, more rarely, epistaxis would take place, or both together. Or, again, profuse diarrhœa, with complete and abrupt cessation of all the bad symptoms,—the pulse quickly regaining the natural standard, the tongue cleaning, the appetite

and sleep returning, the countenance resuming its tranquillity, and the patient loudly congratulating himself on his sudden and complete transition from great discomfort and anxiety to complete ease,—would show that the fever had abated. During the few succeeding days many continued rapidly to improve and to become apparently quite well; others suffered from violent muscular pains in the limbs; and several were attacked with pretty copious epistaxis many days after the critical effort, and before the relapse. In most cases there was a well-marked '*exacerbatio critica*' before the development of crisis; the pulse being 140, the anxiety extreme, the difficulty of breathing very remarkable, the face and lips becoming deadly pale, and great complaint being made of oppression at the pit of stomach.

" At a period varying from seven to fourteen days after the first critical change, a relapse occurred in ninety-nine out of every hundred cases. It was characterized by rigors, headach, anorexia, white tongue, accelerated pulse, and, in very many instances, by nausea and vomiting. In the favourable cases perspiration occurred in a day or two, and relieved the patient; in other cases, uncontrollable vomiting, great thirst, very rapid pulse, a hectic circumscribed flush of countenance, pervigilium, delirium, jactitation, dry, brown tongue, involuntary evacuations, intense heat of skin, gradually increasing debility, and stupified expression of countenance, were observed. Such cases often, after lingering for a week or two, terminated fatally; others died suddenly : thus a person suffering under the relapse would seem to be getting on very favourably, when suddenly vomiting and pallid countenance, with remarkable and sudden sinking, followed by death, would occur. This tendency to sudden death in the relapse-fever was not limited to the febrile period of the disease, it also occurred during convalescence; and I find that Dr. Reid(a) has recorded many such instances in an epidemic

(a) Trans. of the College of Phys., vol. v. p. 266.

resembling the present, which existed in Dublin in the year
1826.

" Few were attacked with diarrhœa or dysentery during
the primary attack, or the interval between it and the relapse,
but very many were seized with dysentery during the relapse,
or immediately after its cessation.   No means that I could de-
vise prevented a relapse in any instance of the short fever
which I observed, whether in the starving peasant or well-fed,
healthy farmer, or even amongst the gentry. Some I confined
to bed during the entire interval between the primary and se-
condary attacks; others were during the same period allowed
to walk about, or to change the air; a most abstemious diet was
enforced in some, a liberal diet was indulged in by others: and
the greatest attention was paid to the bowels and skin. Quina,
in large doses, and bark, were tried, under the impression that
the disease might be of an intermittent character; change of
scene, in short, everything was tried to check the tendency to
relapse, but all in vain; it inevitably came on in the vast majo-
rity of cases, and in some instances so often as three and four
times, causing tedious and protracted convalescence.   In most
cases the relapse occurred as abruptly as the primary attack, with
headach and rigor, in others with a remarkable degree of thirst.
A certain whiteness of the tongue, and an anxious, sickly ex-
pression of countenance, preceded the second attack for a day
or two. Towards the close of the epidemic the primary attack
often assumed the character of febricula, and only lasted three
or four days, but the relapse was not the less certain.   Pus-
tular eruptions about the mouth were very common at the
period of crisis, also common itch, boils, parotid abscesses, dysu-
ria, and laryngitis.   Epistaxis was very common, it frequently
occurred during the first two or three days, without affording
any relief.

The relapse-fever was very exhausting in its effects on the
constitution; and the period of convalescence, dating from the
termination of the last attack, was in most instances unusually

long. It was almost impossible to restore the health of those persons who suffered from several relapses; they became a prey to the various sequelæ of fever, or continued valetudinary for months, with pallid aspects, puffed ankles, palpitations, or flutterings at the epigastrium, unaccountable debility, noise in the head, dimness of vision, and often diarrhœa. Bed-sores were very common in cases characterized by repeated relapses, and when the case was tedious and lingering. It seemed to me that the tendency to bed-sores arose from long confinement to bed, and consequent pressure, rather than from any peculiar tendency in this epidemic fever to produce them. I saw nothing in their appearance different from ordinary bed-sores.

" Towards the close of the epidemic the rigor was often absent in the secondary attack, and but little headach was complained of. Dysuria was very frequent in the secondary attack, particularly in women, the patient complaining of frequent desire to make water, and great straining; in a few days this symptom spontaneously ceased, and was not much relieved by any of the usual remedies. In many instances general convulsions suddenly occurred without any obvious cause, in cases which seemed to be progressing favourably, and death invariably followed. Petechiæ appeared in some of the secondary attacks, but never in the primary. In some cases delirium of a violent character occurred during convalescence, the patient suddenly becoming delirious, incessantly talking, with very rapid, weak pulse, constant jactitation, perfect unconsciousness, flushed face, contracted pupil, and in some cases profuse perspiration, with obstinate pervigilium : such cases were rare, but I met with five or six instances, all hospital patients. In all such cases depletion was out of the question; I tried tartar emetic and opium once, but incessant vomiting and rapid and fatal sinking speedily ensued; small doses of laudanum apparently saved the two last cases. I saw in one such case, a single dose of muriate of morphia—a quarter of a grain—followed by fatal coma.

" Amongst the sequelæ of the short relapse-fever which I

witnessed, may be enumerated anasarca and ascites, diarrhœa and dysentery, gangrene of the limbs, and in a few instances of the chin and top of the nose, vesicular and pustular eruptions about the mouth, cancrum oris, ophthalmia, purulent depositions in the extremities, parotid abscess, abscess under cervical fascia, amaurosis, a crippled and painful condition of the lower limbs, diabetes, phthisis, a swelling of the lower limbs like phlegmasia dolens, and common itch.

" The second or maculated form of the epidemic differed widely from the relapse fever; it was, in fact, the well-known typhus of this country, and differed from the latter in many respects:—for instance, in the invariable tendency to one or more relapses; the absence of petechiæ in all the primary and most of the secondary cases; the remarkable tendency to hemorrhage from all the mucous outlets, as the nose, bowels, vagina, &c.; the invariable occurrence of severe muscular pains of the limbs after the crisis and at the commencement of convalescence; the absence of deafness, which is observed in seven out of ten cases of maculated fever; the absence of delirium, which rarely or ever occurred in the primary attacks, or during the relapse, except in very severe or fatal cases, although there might be confusion of mind and talking during sleep or dreaming; and the invariable occurrence of a critical termination, either by perspiration, epistaxis, or diarrhœa. The frequency of sudden deaths during the secondary attacks; the great tendency to dropsy and anasarca during convalescence; and lastly, the remarkable fact that many had two or three separate attacks of this form of fever, although enjoying good health for months between each attack, served to distinguish this form of the epidemic. Few got maculated fever twice within a short period of time, and I believe that few have contracted it oftener than once in their lifetime, although there are of course exceptions, as I have myself witnessed(a).

(a) The report of Drs. Cusack and Stokes on the mortality amongst our Irish medical practitioners proves that several medical men have had fever

" With respect to the treatment of the relapse-fever, I found from experience that in the primary attack little medical interference was useful or requisite. A dose of calomel and rhubarb, clipping the hair, cold lotions or affusions, and, when the headach was violent, leeching and cupping in the middling classes, and a blister to the nape in the poor, weakly, hospital patients, gave most relief. Saline effervescing mixture, a blister to the epigastrium, five grains of calomel with one of opium, sometimes, but rarely, relieved the vomiting. In all cases the critical evacuations relieved the symptoms, and did not seem to be hurried by any of the usual remedies. Plenty of cold water, whey, and barley-water, ventilation, and cleanliness, was all that was required amongst the poor; but local depletion, moderate purgation, cold affusion on the head, leeches to the epigastrium where there was tenderness, and calomel and opium, were decidedly useful, as palliatives, in the more comfortable classes.

" In hospital practice I was deterred from even local bloodletting by the exhausted and debilitated condition of most of the patients; and it did not seem to me that, in the numerous cases in which I tried local blood-letting in private practice to relieve head symptoms in the form of fever under consideration, much was gained beyond a temporary diminution of pain. In most instances the pain returned a few hours after the bloodletting, or was succeeded by an almost equally distressing buzzing in the ears, a symptom which I did not observe so frequently where no local depletion was employed.

" Aperients had no effect in subduing the severity of the vomiting, neither had effervescing mixtures, blisters, or turpentine stupes. The only medicine I saw give ease was five grains of calomel and one of opium; this often checked the vomiting. At first I rather encouraged the vomiting by tepid drinks, but after a day or two, or when it became incessant and exhausting, I

twice, and some three times; the late Dr. Curran had fever twice, and was spotted on both occasions.—ED.

gave calomel and opium, and applied a mustard poultice to the epigastrium. These means often succeeded in affording ease from the vomiting, but much oftener failed. Hydrocyanic acid and creasote were often tried without advantage. In every case, however, whether the case was left to nature or that remedial measures were used, about the fourth day, or, at latest, as soon as the perspiration broke out, the vomiting abruptly ceased.

" Dysentery very often sprung up during the second attack, or during convalescence after the first. In the acute stage, when there were tormina, with tenesmus, frequent and bloody stools, a dose of castor oil, with fifty drops of laudanum, or rhubarb with aromatic powder, followed by calomel and opium, blisters or turpentine stupes to abdomen were found useful. Rice milk, and hydrargyrum cum cretâ, with powder of chalk and opium, and ipecacuanha in half-grain doses, was also a useful combination. In many bad cases, large doses of calomel and opium from five to ten or fifteen grains, with two or three of opium, was most useful even without the mouth being affected; and I found that the opium alone was not so efficacious. In all cases, aperients, every three or four days, of castor oil and laudanum, with or without oil of turpentine, or rhubarb, were of decided use; and even in chronic cases the patients were always temporarily relieved by purgatives, and loudly called for them. When there was much blood in the stools, oil of turpentine, in doses of twenty drops, three times a day, was given with advantage. Turpentine stupes were also soothing.

" When the dysentery was not checked in its early stage, it assumed a chronic form. There were frequent stools, with tenesmus, watery evacuations, occasionally tinged with blood; little abdominal pain, but gradually increasing debility and exhaustion, with remarkable tendency to emaciation; pallor of lips and countenance; altered, whispering, whining voice; uncontrollable evacuations; weak but not rapid pulse; and a feeling of inward sinking of a most distressing character. In most of these

cases the appetite was good, and the tongue clean. Few were rapidly fatal; the patient seemed to die by inches, becoming feebler and looking thinner and more wretched day after day; and this I have observed even when the diarrhœa was checked or completely removed. In all these cases I remarked that the patients seemed to give themselves up; they said, day after day, that they knew they were dying, but were quite resigned to their fate, and most grateful for the attention shown them. In those chronic cases of dysentery supervening on fever, mercury did not answer; I have given it in all doses, and in all combinations, without ever experiencing permanent benefit from its use. It is extremely difficult to salivate such patients, but I have done so without any advantage. Astringents are more useful; as, acetate of lead, from two to three grains, three times a day, with one, two, or three grains of opium. I do not think that large doses of acetate of lead are as effectual as moderate ones. No matter what astringent was used, I found occasional aperients most useful in abating pain and procuring rest. Toasted rhubarb, and castor oil and laudanum, were the aperients I usually employed. In many cases I observed that after the complete removal of all the pressing symptoms, when the diarrhœa and pain were completely removed, and the stools natural, and the appetite good, yet the patients sank from day to day. There was no complaint of pain, no want of rest or of appetite for food, the pulse was natural, the tongue clean, and the patient expressed himself comfortable and well, but he could not leave the bed; he took his nourishment greedily, yet he became obviously weaker from day to day. There was no reaction, the face became paler, the limbs and face more and more attenuated from day to day, the voice weaker, and this notwithstanding the use of as nourishing a diet as prudence would sanction.

"After a longer or shorter interval of time, from one to three weeks, during which the patients became living skeletons, uncontrollable diarrhœa returned, and quickly carried them off. In many of the cases of dysentery which recovered,

I found large doses of opium, alternated with aperients, of great service. I have given with advantage five or six grains of opium three times a day, without producing even an approach to narcotism. In children I found great benefit from the use of small quantities of wine after the diarrhœa was checked, and often, even when the remedies failed in removing the bowel complaint, the patient rallied and recovered on the exclusive use of wine, without any medicine whatever. . Acetate of lead, and minute doses of opium, were of great use in the dysentery of early life.

" Galls in powder, one scruple three times a day, occasionally succeeded. Pomegranate bark too was sometimes useful, and I saw several cases in which cinchona bark burned to a powder, and given in tea or table-spoonful doses, with wine or whiskey, acted powerfully as an astringent; but in most of those cases the diarrhœa returned. I have tried chloride of lime in many cases of dysentery, both internally and in injections as recommended by Dr. Reid, in the Essay already referred to; but although in several instances it had a most beneficial effect for a day or two, the disease invariably returned. I never saw them of use except in correcting the abominable fetor which emanated from such patients' bodies and evacuations. In very many instances the removal or subsidence of the dysentery was followed by anasarca and ascites; here I found tartrate of iron, a scruple three times a day, and a combination of acetum scillæ, spirit of nitrous ether, and compound tincture of cardamoms, of use. I have employed with advantage in such cases, the decoction of pyrola umbellata, and also tar water, half a tumblerful three times a day. Digitalis, although a diuretic much employed in dropsical cases where the vital powers are below par, I found not to agree; it caused nausea and a tendency to sinking. In some few cases I found a strong decoction of uva ursi(*a*) of use. In

(*a*) [The uva ursi, the trailing arbutus, or bear berry, is indigenous to Dr. Lynch's district.—Ed.]

several chronic cases of dysentery, after the acute symptoms were subdued by calomel and opium, turpentine stupes, or blisters to the abdomen, I found decided benefit from the use of nitrous acid and laudanum; it cured several cases, and always allayed the tormina and tenesmus. Although patients affected with dysentery called ravenously for animal food, and soup particularly, it always disagreed with them.

" I saw no advantage from opiate injections or supposito-ries. Nitrate of silver and acetate of lead were fairly tried as injections to allay the tenesmus without benefit.

" The use of wine and of opium, in the vast majority of cases, was only had recourse to in the maculated form of fever; and I do not think that this form of typhus, in the very large number of cases in which I have witnessed it in all classes during the last three years, has materially differed in its course or requisite treatment from the ordinary typhus fever of Ire-land. I may, however, observe, that, as regards the adminis-tration of wine or stimulants in maculated typhus, I think their use is begun generally too early, and in too large quantities. As regards the use of tartar emetic and opium in the advanced stages of typhus fever, and under the circumstances described by Dr. Graves, I must say that I have never used the combination in hospital practice, but I have employed it several times in private, and seen it used much oftener in the practice of others; and the impression on my mind from what I have observed is, that practitioners will be disappointed if they expect to rescue their patients by such a combination. I have seen uncontrol-lable vomiting and fatal coma in several cases almost imme-diately follow its use. Very likely, however, had Dr. Graves seen these, his experienced eye would have seen good cause for not trying the preparations in these cases, or of so propor-tioning the ingredients as to produce the desired effect. I have, however, repeatedly given opium with advantage by itself in cases similar to those described by Dr. Graves; but still more frequently I have seen such cases end well without any medi-

cine, but by the moderate use of wine and nourishment. I may mention, that in some of the most remarkable instances in which I found the use of laudanum beneficial, the pupil was strongly contracted; and it is of importance, as I have often seen, to re-collect that when laudanum is given in such cases the first dose should be small—not more than ten drops—and the second not so much, however often it may be repeated. I have seldom seen any sudden benefit from the use of opium in appropriate cases in the advanced stages of typhus, but after a few doses some little tranquillizing effect will be produced, and at last sleep will follow, but so uneasy and so unlike tranquil repose as often to create a suspicion of its being coma and not sleep."

[The great length to which this Report has already advanced,—much greater than what we originally contemplated,—compels us to extend it to another Number of the Journal. Our next will contain the section on Leinster, an Appendix on the province of Munster(*a*), and, if possible, the General Summary. As it is intended to be a permanent record of the late disastrous epidemic, as well as an epitome of medical opinion in Ireland on the subject of fever, we offer no apology for concluding here for the present, in order to give place to original matter of more immediate or pressing importance. We have in the present Number already greatly exceeded the limits usually allotted to Original Communications, but, at the same time, we feel that no excuse is necessary for trespassing still further on the review department, by inserting the following important letter from Dr. H. G. De Mussy.]

(*a*) The reports of Drs. Callanan and Popham of Cork, and Dr. Cronin of Cove, are already in type.

Art. XI.— *The History of the Cases of Poisoning by Lead which lately occurred at Claremont, with Observations; in a Letter to W. R. Wilde, M. R. I. A.* By Dr. H. Gueneau De Mussy, Physician to the Hospitals of Paris, and to the College of Louis le Grand, &c.(*a*)

Claremont, March, 1849.

My dear Friend,—The events I am going to relate to you would, in the middle ages, have been ascribed to some mysterious influence, or to supernatural persecution. Science now enlightens us on the true cause of the evil, but at the same time imposes upon us the obligation to employ all the resources it gives us to combat the danger, which belongs to a class that human prudence can avoid.

Whilst I was endeavouring to allay the sufferings of my patients here, with whose cases report must have made you somewhat acquainted, I heard that in this neighbourhood, and in different parts of England, the use of water kept in leaden cisterns or running through leaden pipes, had produced similar or even more terrible and more obstinate effects than those which my patients complained of.

I read in the Medical Times of the 30th December, 1848, a case similar to those which I am going to describe; and Dr. Thompson, of Stratford-upon-Avon, gave an example which ought to be imitated, in calling public attention to similar facts which he had witnessed. In the hope of being useful to the profession and the public, I send, for publication in your periodical, the true relation of what came under my own observation.

I was summoned to Claremont in the beginning of October, 1848; and on my arrival was immediately shown into the room of one of the members of the family, who had been residing there since the preceding March. I found him lying down,

(*a*) Translated from the French by E. Le Clerc, M. D.

with an anxious countenance, the conjunctivæ of a yellowish colour, and the flesh flabby, evidently proving a loss of substance. He told me he had been suffering for several days from violent colic, which had been relieved, after a constipation of two days, by abundant alvine evacuations produced by a purgative draught.

This was the third attack of the same nature during the space of five weeks. Some time before, towards the end of July, he had been suffering from colic, with nausea, frequent eructations, and irregularity of bowels. Having been for some years past subject to intestinal derangements, he was not astonished at these symptoms; and having had jaundice several times, he did not mind the icteric colour of the conjunctivæ; but he acknowledged that these three last attacks of colic were more severe than the previous ones. Formerly the pain was experienced around the umbilicus; lately it was more towards the epigastric and hypochondriac regions. At first, deceived by the icterus and these subcostal pains, more violent on the right than on the left side, I thought it was the termination of an hepatic colic. To more violent pains had succeeded a general soreness of the abdomen; the appetite was coming back, and he had a quiet pulse.

Struck with the peculiarity of this attack, I prepared myself to watch carefully for any fresh indications of disease. At this time I learned that a brother of my patient had experienced the same symptoms; but no one was astonished at it, as it was supposed he was suffering under a liver complaint contracted on the western coast of Africa. The icteric colour of the conjunctivæ had caused him to believe it to be the re-appearance of his former enemy. He was not, however, complaining then, and was following a line of treatment calculated to subdue his old antagonist. I should tell you that Vichy water had been prescribed for him, and he had been accustomed to drink some of it at table.

A third patient, of forty-eight years of age, who was also

subject to constipation, had violent colic a few days before, attended with nausea, and even vomiting; and it was with great difficulty, and after many fruitless efforts, that he succeeded in passing a few particles of fæcal matter, by the use of lavements; but he attributed all these symptoms to a change of climate bringing back his former indisposition under a more severe form, of which, however, he hoped soon to be freed through a course of treatment consisting of tisans and emollients. He was not suffering much when I arrived, having been completely freed from his abdominal pains. I must confess, even to my shame, that it did not occur to me to bring these three cases together, and to ascribe their similar symptoms to a single cause. I remained with my patients for about a week, flattering myself that they would have a speedy recovery.

A few days elapsed, and no bad symptoms disturbed our security. My patients had resumed their usual occupations, had good appetites and pretty fair digestion, but were still very weak; and pale, sallow complexions had replaced the icteric colour. My delusions did not last long. About ten days after, a new access of symptoms began, with a painful sensation of constriction about the epigastric region, anxiety, nausea, and eructations. In a few hours after, the patients felt as if the intestines were lacerated with two arrows drawn in contrary directions, and piercing the hypochondriac and the iliac regions; the face became altered, the skin got cold, and the pulse was small and frequent. Constipation, at first conquered by injections, now became more obstinate. The injections, formerly retained in the bowel only in part, were now retained entirely; the gases and liquids accumulated in the intestines produced, under the pressure of the hand, a loud *gargouillement*, which could be heard at some distance; a sensation of fulness, and a pressing desire of going to stool, induced efforts without result; the sphincter ani remained contracted, and gave exit neither to gases nor liquids, thus offering an invincible resistance to the strong contraction of the abdominal muscles.

In one of the cases (and this I beg you to remark particularly, as it is very uncommon), the sphincter vesicæ did not permit the urine to pass for more than thirty-six hours, so much so that the bladder extended up to the umbilicus; in the same patient the whole of the genito-urinary apparatus was especially affected. At times the testes were retracted up the inguinal canal, and occasioned most excruciating pains in the back, loins, scrotum, and perineum. Painful as these sufferings were to witness, those of the nervous system generally were more frightful. The patients were in a state of nervous irritability, difficult to describe. In their beds they were restless and unable to find an easy position, and after many useless efforts they fell back exhausted and worn out with pain; the respiration became hurried; the heart's action was painful and violent; groans and sighs were uttered with vehemence, whilst abundant tears ran from the eyes: symptoms greatly resembling those of severe hysteria. These tears, sighs, and groans, were not occasioned by the violence of the pains, and often coincided with the abatement of the suffering. The powers of the system were remarkably supported during the paroxysms of anguish, while the cessation of suffering was accompanied by a corresponding prostration of nervous energy. In the meantime the surface of the body was affected with an excessive hyperæsthesia, so much so that it was oftentimes impossible to touch even slightly the skin of the chest, abdomen, back, face, and superior or inferior extremities, without forcing tears and cries from the sufferers. This hyperæsthesis was only superficial, and was much more excited by a slight touch than by hard pressure ; thus if, instead of touching the abdomen with the end of my finger, I applied firmly my open hand, far from increasing the pain, it lessened it. This increased sensibility of the cutaneous system was neither constant nor general; it was excited sometimes in one part of the body, sometimes in another ; at times it would become less, and now and then entirely disappeared, to re-appear soon after without

any ascertainable cause. To a superficial examiner it would have appeared to be confined to, or at least more marked over the osseous projections. I observed it for the first time along the spinous apophysis of the dorsal vertebræ. It is, as you know, the acknowledged symptom of myelitis, or spinal meningitis; but I may observe, *en passant*, that I never remarked it in these two last diseases. But I have often observed that this extreme *local* sensibility was only apparent, and that it actually and truly existed only where the hyperæsthesis was *general*. Thus it was with the patients at Claremont : after having touched the spinal region, I convinced myself that the same kind of touch on the other parts of the body excited the same kind of pain, which was sensible along the spinal column and the other projecting osseous parts of the body, because the skin over those parts was more constantly pressed between the bones and the bed.

Does not this strange hyperæsthesia justify, in part, the similitude I have already alluded to between some symptoms of hysteria and those of this disease?

As inexplicable in one affection as in the other, it was among the most striking phenomena of the disease I was observing; and in two other patients it was almost the only symptom which indicated the saturnine poisoning. One of these was a female of a nervous and lymphatic constitution, with whom the constipation soon yielded to remedies, but the hyperæsthesia lasted for three days ; besides, she experienced severe lancinating superficial pains in several parts of the body, such as in the scalp and the thoracic parietes. The other was a young man of twenty-four years of age, of a good constitution. He never experienced either colic or constipation, but complained during several days of very great pain in the anterior parietes of the thorax, which was greatly increased by the slightest touch, and even by the respiratory motions. It was more severe above the costal cartilages ; at the same time, the nervous sensibility was extreme, and accompanied, as in the other patients, with sighs, groans, and

abundant tears. Certainly, if these symptoms had been present
in this case only, unaccompanied by any other phenomena of
more importance, I never should have attributed them to the
disease to which they truly belong.

I urge these details upon you, because I think they will be
of use in elucidating the question as to the origin of the nervous
derangements in saturnine diseases. Some pretend they are
only the effect of the reaction of the colic on the nervous system ;
others, more correctly, I think, believe them to be the direct
effect of the poison on the constitution ; and this is, if I do not
mistake, the opinion of your illustrious Dr. Graves, in his
profound work on Clinical Medicine. It is also, I think, well
supported by these present details, to which I could subjoin
others. It is not uncommon to see in manufactories of the
carbonate of lead,—the classical land of saturnine affections,—
the disease begin with paralysis more or less intense. I have
myself seen a young man, not many days engaged in one of
these manufactories, who was just apprized of the danger of his
occupation by an epileptic-like fit. Besides, if we examine
with care the nature of the saturnine symptoms, we shall give
them all the same origin, *i. e.* a functional derangement of the
nervous system, and more particularly of the cerebro-spinal
apparatus. I say more particularly, and not exclusively, for some
symptoms seem to point out that the ganglionic system is not
always free from it. The icteric coloration is one of these ; and
here I beg you to observe, that I do not confound the jaun-
dice which may accidentally supervene, with the cachectic
colour proper to the saturnine affections, and so improperly
called " saturnine icterus." But, independently almost of this
specific colour, I have seen at Claremont and elsewhere pa-
tients labouring under poisoning by lead subject to a transient
icteric complexion ; and I have not the slightest doubt, that
it is a form of nervous jaundice *par excellence*, and that it is
the result of a spasmodic action of the biliary conduits ;
and that the ganglionic system does not seem to me to be af-

fected in its secretory functions in painter's colic; for consti-
pation is not always present, and when it exists is it not rather
a retention of fæcal matter than a suspension of the intestinal
secretions?

In the patient who did not pass his urine the bladder was
full, but the produce of the renal secretions was kept back by
the sphincter vesicæ, and in the same manner as the fæcal mat-
ter was kept back in the intestines by the sphincter ani, the
spasmodic action of the pylorus in the stomach opposed itself
to the passage of its contents, and they were rejected by the
mouth. I am therefore of opinion that it is no more philosophi-
cal, and more in accordance with sound observation, to ascribe
those supposed secondary symptoms to abdominal disease,
than to ascribe rheumatismal pericarditis to a metastasis
of the articular affection. What may be said is, that in the
greatest majority of cases rheumatism affects the pericardium
only after having affected some other fibro-serous membranes;
so, likewise, saturnine intoxication more commonly affects the
rest of the nervous system after having previously attacked the
abdominal organs.

Although this dissertation has taken me away from my pa-
tients, it does not entirely remain foreign to the subject of their
disease, for it led me to the adoption and explanation of the
treatment I followed, and which proved to be successful.

The symptoms which appeared in all of them about the
same time proved to me that I had to grapple with an enemy
common to all, and not with an individual one, as they them-
selves supposed. I thought then of saturnine poisoning. I ex-
amined the gums, and in two cases I found a slate-coloured line
well-defined, and in one of these the mucous membrane of the
mouth was strewed with spots of the same colour. I then ex-
amined the gums of all the inhabitants of the house, and in the
greater number the fatal line was more or less present. Doubt
was no more permitted; the diagnosis was written in visible
characters; and my learned friend, Dr. Rieken, physician to

His Majesty the King of the Belgians, who had just arrived at Claremont, was of the same opinion. We immediately tested the water we had at hand with a solution of sulphuretted hydrogen, but whether the reagent was not good, or that this water was not the same as that used in the palace of Claremont (which is more likely), it did not produce any precipitate.

The next day Sir James Clark having come to inquire after the inhabitants of Claremont, I told him what had happened, together with my suspicions. He kindly took with him to London several samples of the water, and sent them to Professor Hoffman, who detected in them a considerable quantity of lead. It is useless to tell you that immediately after this the pipes that brought the waters to the palace were cut off.

Again our patients began to experience the same kind of sufferings, but much more violent and obstinate than those they had previously to my arrival. The poison had accumulated. Till then, they had been free from those hysteric-like phenomena which I have already described. I first began with the usual orthodox treatment. To counteract the constipation was the first indication. I thought I should succeed with purgatives, combined with opium and belladonna; but I must confess that though I have treated or seen treated hundreds of cases of colica pictonum with these remedies, I seldom met with such resistance to remedies as on this occasion. Moreover, when at last I had surmounted the difficulty, I found the wished-for result of the purgatives worse than useless in its effects. Saline and resinous purgatives, calomel, and castor oil, were either vomited or returned without any result. One of the patients refused to take any medicine, because he was certain to throw it up immediately, with the most severe pains. For *twenty days* he gave back but a very small quantity of the lavements, at times slightly tinged with the fæcal colour, but most commonly such as they had been injected. The colicy pains were violent, but yet not so much the subject of complaint as the nervous sensibility and uneasiness of the surface.

In one of the patients, sulphate of magnesia produced several copious evacuations; and, strange to say, he never suffered more severe torture than during the three days which followed the result from which he expected so much good. I then gave up loading the stomach with liquids, and had recourse to small pieces of ice, and croton oil in pills. I gave as much as eight minims in twenty-four hours. It produced at first a painful emission of gases, a part of the injections, and at last copious evacuations of matter, hard and blackish, in which one could easily discover some detritus of the food used several weeks previously. But,—alas!—to my own grief and the despair of my patients, these evacuations were followed by pains, if possible, more violent than ever, as in the case where they succeeded the administration of the sulphate of magnesia.

No febrile symptoms attended upon these cases all through; at times abundant sweats, sometimes spontaneous, at other times produced by dry or soapy frictions, or hot baths, when the patients were able to remain in them, afforded some moments of ease, and a relief which lasted a few hours, and even a few days. But new symptoms soon came on; the patients began to lose strength, their emaciation became extreme, and the skin assumed a well-marked cachectic colour.

At last the most alarming symptom of saturnine poisoning came to increase my fears. One of my patients had several times vertigo and convulsions, and in another the sight became so weak as to make me fear amaurosis.

The ill success I obtained from the purgatives induced me to relinquish them altogether. Remembering Stoll's advice, which I had seen followed with success by my father, at the Hotel Dieu in Paris, I began to use narcotics and sedatives almost exclusively. Opium and belladonna, in doses of one grain each, repeated every four or six hours, with small pieces of ice at first, and afterwards with a weak infusion of rhubarb, succeeded better than all the drastics to calm the nervous system and to overcome the constipation.

A new proof of the nature of the disease! The stupefaction of the nervous system was necessary to the expulsion of fæcal matter. I will go farther, and say that the success which is generally obtained by purgatives, at the begining of saturnine diseases, when colics are the most predominant symptoms, is due as much to the perturbative action of these medicaments, as to their special and primitive action on the digestive canal.

During this accidental epidemic several of the inhabitants of the palace began to experience the first symptoms of the disease, while I was there; in one of them especially, in whom it began with violent colic, I used at once purgatives with energy, and the spasm yielded readily and completely. A strong purgation overcame at the same time the spasm and constipation. But with the three patients who had engrossed my attention more particularly, I had to contend with a poisoning of long standing, and its inveterate effects. I could not make any impression on the nervous system by indirect treatment, I was obliged to attack it directly with antispasmodics, which alone succeeded.

This success did not satisfy me. It was clear that if with the narcotics I had succeeded in overcoming the pathological effects of the poison, they were useless against the poison itself. I could not hope for a perfect cure unless I could expel the lead from the system, or render it harmless. In a word, I had yet the chemical treatment to administer. My patients were not suffering any pain, but they still had the cachectic complexion, the breath was fetid, and they had not regained strength; they were as thin as phthisical patients in an advanced stage; the skin and mucous membrane had lost their natural colour; a *bruit de soufflet anemique* could be heard over the blood-vessels of the neck; and the extensors of the hands were beginning to be paralysed.

Notwithstanding the difference of opinion of chemists and physicians, I resolved to employ sulphur in association with

chalybeate preparations.   I prescribed a syrup of sulphuretted
hydrated iron, in connexion with sulphurous baths, for which
latter purpose a zinc vessel was constructed.   These sul-
phurous baths were taken every second day; on the interme-
diate days, soapy baths were resorted to.   Only two patients
followed this treatment, the third having gone to the Conti-
nent, where he had several fits of colic and a long conva-
lescence. He afterwards had recourse to sulphurous baths, and
recovered completely.

The chemical action showed itself almost immediately by
the black discoloration of the nails of the feet and hands, and
by the appearance of similar spots on different parts of the
skin.   One of the patients came out from the second bath with
the abdomen entirely black.   The soapy frictions and baths
usually washed away the spots from the skin, but not those of
the nails.   The appearance of this reaction,—which is very
common with men working in lead manufactures when using
sulphurous baths,—is explained by the combination of the
sulphur with the saturnine molecules adhering to the skin. In
these cases it was evident that the lead was brought to the sur-
face of the body by means either of the sudaminal or follicular
exhalation. and perhaps by both. The metal is eliminated and
transformed into sulphuret of lead by the sulphurous baths,
and then taken off by the soapy frictions and baths.   These
were not useless, for without them the lead deposited on the
surface might have been carried again, by absorption, into the
economy.

But the skin was not the only means of giving exit to the
poisons, I discovered it in the urine, by a solution of hydro-
sulphate of ammonia.

You know, my dear friend, that some physicians and che-
mists look on sulphur as the only efficacious remedy : others,
on the contrary, assert that it is without any effect.   What I
can tell you is, that the success was beyond my hopes.   After
two or three weeks I had the satisfaction of seeing my patients

progressing rapidly and surely towards recovery. This happy
result induced me to try the same means with another person,
older, and of a weaker constitution, and, consequently, for whom
I was most uneasy, and the results were as satisfactory.

At the beginning of November last the small colony of
Claremont went to reside at Richmond; it was in this last place
that the acute symptoms quite disappeared, and that I began
the sulphurous treatment under which my patients recovered
that state of good health which the fatigue and anxieties of
the camp and of the sea had impaired a long time before the
saturnine poisoning.

It was only when the recovery was so much advanced that
I became acquainted with the labours of Messrs. Milsens and
Dumas, on the successful results of iodide of potassium, used
in cases of poisoning by lead. I did not employ it, but I re-
collect having seen it used in such cases as a restorative with
patients reduced to the last degree of saturnine cachexy, with-
out any satisfactory result. Perhaps it had been used too late.
A priori, I think we may mistrust a remedy which acts only in
dissolving the poison, and rendering it more easy of absorption,
whilst it makes it more susceptible of elimination. It is, how-
ever, proper to submit it to the consideration of the profession.
If iodide of potassium has the virtues that are ascribed to it, I
think it would be of great advantage to use the waters of Ham-
bach or Schwollen, which contain a certain proportion of this
salt united to some iron, and other alkaline salts, and which,
besides, have an acknowledged efficacy in dyspepsia.

The poison did not act on all the patients at Claremont
with the same rapidity and intensity, and you will not be asto-
nished at it; for you know that the same morbid cause has not
always the same effect upon those who are exposed to it. As for
the lead, we see many workmen handling it for several years
with impunity, whilst others experience the bad effects of it at
the very beginning. It is thus that some patients have suffered
from a saturnine affection after the use of a few grains of ace-

tate of lead, or even by a few vaginal injections, whilst more commonly patients do not suffer by this remedy at all.

One of my patients, as I told you before, was accustomed to drink Vichy water at table.   This was a very unfortunate predisposing circumstance : it is probable that the salt of Vichy water, i. e., bicarbonate of soda, united to the lead of Claremont water, had much to do with the violence of the attack under which he suffered.

At the time of my arrival at Claremont there were thirty-eight inhabitants. Thirteen of these have been attacked, eleven men, and two women. Four of them had some symptoms two months previously to my arrival ; the other cases occurred under my own eyes. Some, even after the pipes had been cut off, were affected, and one when on the Continent, a week after leaving England. Six children in the household, aged from three to seven years, have been exempt from it.   Only half of the patients have had the gums marked with the slate-coloured line, and spots of the same colour on the mucous membrane of the mouth ; and these spots, and the bluish line of the gums, were observed on several others who did not experience or exhibit anything else : and those signs of the poison having been taken into the economy have not yet disappeared. The morbid cause has acted in these cases, as it often does, with caprice, and according to individual dispositions which defy every reasoning. The malady has shown no respect for condition, and attacked indiscriminately servants, aides-de-camp, and princes, and did not spare even the most august and pious of victims.

Such, my dear friend, is the pathological part of my relation ; but I have still a few details to give you on the " *Prima mali labes*," viz., on the conditions under which the disease originated, i. e., the introduction of the poison into the waters.

The spring that furnishes the palace of Claremont with water issues from a sand bed at about two miles distance.   It

was chosen for its uncommon purity from among a great many others in its vicinity, and the water was, thirty years ago, conducted to the palace through leaden pipes. In the present day some other metal would, perhaps, have been selected, for experience has taught us that pure water, and especially distilled water, acts rapidly on lead when it comes in contact with it.

Thus Tronchin proved that the inhabitants of Amsterdam were indebted to the rain water, kept in leaden cisterns, for the colic they were so much subject to in his time. The purity of the Claremont water becomes a most dangerous property, and not only to it but to other springs. Whilst I was combating its pernicious effects, I heard that there had been several similar cases in different parts of England; they are not uncommon in the county of Surrey, and especially in the neighbourhood of Claremont. Besides the cases published by Dr. Thompson, I know of several others at Weybridge, Windsor, and in different other places.

The water of the palace of Claremont had been for many years employed by its inhabitants without any bad result; how was it then that this water, till now harmless, had become suddenly a violent poison? This is what has puzzled me and everybody else; and although I looked for its cause with the greatest attention, I could discover only a single alteration, apparently of little importance, lately made in the transmission of the water.

Until about eleven months ago, leaden pipes used to take up the water from a large natural cistern near its source. When the present occupants of the palace came to live in it, they wished to preserve this natural cistern from the vegetable and animal detritus that usually fell in it. For this purpose an iron cylinder of six feet diameter and twenty feet high was constructed, and was sunk into the ground fifteen feet deep. The water swelled up within, and a leaden pipe was attached to it, with a funnel-like mouth projecting by a few inches in the

inside of the cylinder, which was closed at top by an iron cover with several holes in it to allow the air to make the requisite pressure on the surface of the water. You may discover what has been the influence of this change; for myself I think it has been the origin of all the evil. The datum is certain, but I have only hypothesis to offer as to the chemical reaction of the water. Mr. R. Philipps, so well known for the accuracy of his researches, has, however, analysed the water of the spring, and has only found in a gallon of it 5·7 grains of solid and saline matter, consisting of

	Grains.
Common salt, ...	2·7
Sulphate of lime, silica, oxide of iron, and vegetable matter, ...	3·0
	5·7

That is to say, a proportion of salts, and especially of sulphates, too small to prevent the formation of hydro-carbonate of lead, for experiments have proved that $\frac{1}{4000}$ of sulphate is necessary to prevent the development of the deleterious salts.

As for the part acted in this case by the iron cylinder, I must look for it; first,—in the galvanic action resulting from the contact of the two metals with the water. I have, however, some hesitation in admitting this supposition, for it seems to me that the water contained in the cylinder should be charged with more lead than that which ran through the pipes, and remained for some time in the leaden cistern of the palace; and yet the water of the iron cylinder did not contain any lead : that of the pipes contained some, and that of the cistern contained much more of it. Secondly,—in the action of the iron on the water, and on the salts which it contained; and thirdly,— in the very purification of the water, caused by the enclosure of it in the iron cylinder, and the filtration which it underwent to get into it. We may understand this better at some future day.

For the present, my dear friend, I hope I have said enough to impress upon my readers the danger of using water that has been in contact with lead, a danger *increased in proportion to its purity;* and to point out the bad effects that are likely to arise from transmitting water alternately through lead and iron conduits.

If to arrive at those results my narration has been too long, I hope you will excuse it in favour of its good intentions.

<div style="text-align: center">Truly your's,</div>

<div style="text-align: right">H. Gueneau De Mussy.</div>

P. S.—I should inform you that Professor Hoffman has ascertained the quantity of metallic lead contained in the water examined by him. He has found that it amounted to a grain per gallon, an enormous quantity, when we consider that the poisoned water was used in all culinary and table purposes, and, previously to the discovery of its deleterious character, even in the preparation of tisans and lavements.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

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Clinical Lectures on the Practice of Medicine. By ROBERT J.
GRAVES, M. D., &c. Second Edition. Edited by J. MOORE
NELIGAN, M. D., &c. Dublin, Fannin and Co. 1848. 8vo.
2 vols. pp. 586 and 570.

DURING the past year the press has literally teemed with me-
dical publications. Works of all sorts and sizes; thin octavos,
fat duodecimos, pamphlets, and ephemeral productions with-
out end, have issued from the Paternoster-rows and Fleet-
streets of literary or scientific celebrity. Amidst this avalanche
it is refreshing to meet occasionally with a work, the matured
labour of an experienced practical physician, stamped with
the approval of the medical public, as evidenced by the de-
mand for a second edition, and improved, corrected, revised,
and edited by a gentleman who, to his other acquirements of
a practical and scientific character, has himself earned literary
reputation of no mean account. Of such a nature, and ap-
pearing under such circumstances, is the work which heads this
notice. It is not our usual practice to review at length second
editions, especially when the merits of the first issue had been
previously canvassed in full in our pages; nor would we now
deviate from this custom, were it not that the work before us
bears more the semblance of a new publication than of a new
edition.

In the twenty-third volume of the former Series of this
Journal, Dr. Graves's "System of Clinical Medicine" was noticed,
its contents enumerated, and the author's opinions freely com-
mented on. On the present occasion we would rather investi-
gate the new material—the alterations and additions—than
refer to those portions already well known to, and duly appre-
ciated by every student in medicine. There is, however, one

subject noticed in the previous review to which we think it necessary again to refer, a topic ever fruitful, ever interesting, and particularly valuable to the Irish practitioner; we allude to our endemic fever. In the first volume of the present edition we find, among the new matter, a lecture on the late epidemic and its causation throughout the country generally.

" A vast amount of mischief," says Dr. Graves, " was produced by the attempt made to connect fever epidemics with a deficiency of food; and the great diffusion, the rapid spread, and the unusual mortality which characterized the fever of 1847, must be, to a great extent, ascribed to the prominence which from the very first was given to famine, as an exciting cause of typhus fever in Ireland. The text put forth so authoritatively, ' if there be, no famine, there will be no fever,' prevented proper attention from being paid to the real causes which produce and promote the spread of epidemic diseases; and the means adopted to supply a deficiency of food were, as I shall now show, singularly productive of those causes.

" Want of a sufficiency, or food of an unwholesome or improper character, predisposes the human frame to disease by its debilitating effects on the system, and thus individuals become more susceptible to the contagious influence of epidemics when they exist; but I cannot admit that either cause is sufficient to generate an epidemic. Over-crowding, deficient ventilation, and filth, are causes which in themselves give rise to epidemic diseases; and when to these are added the debilitating effects of famine, we have a combination of circumstances extraordinarily calculated to promote the diffusion of a contagious disease previously in existence, and as I have already said, typhus fever is always endemic in Ireland.

" Owing to the failure of the potato crop and other concomitant circumstances, there was great want of food in this country in 1845 and 1846. In the former year there was no remarkable increase in the number of cases of typhus fever which are at all times to be met with in Ireland, and active measures were taken to provide the people with employment and a sufficiency of food. · The measures adopted had the effect of congregating together large masses in the open air in a cold wet season, and of over-crowding the poor-houses and hospitals throughout the whole country to a most frightful extent."

The author here quotes Dr. Lalor's graphic description of the epidemic, as it appeared at Kilkenny, from that gentleman's communication in our fifth volume. In illustration of his position he adduces the fact that,

" The congregating or crowding together of people, either in the open air or in buildings, has been at all times productive of disease. Thus in the year 1812, in the province of Gujerat, West Hindostan, the people crowded into the towns in consequence of the great des-

titution which prevailed, when an epidemic broke out amongst them which nearly decimated the people; but the epidemic was of small-pox, and not fever. But never, perhaps, in the history of the world, was such a fearful commentary on the effects of the *entassement* of individuals witnessed, as in Ireland, during the year 1847. The newspapers and periodicals of the day teemed with illustrations of the fact, *that the Irish epidemic of* 1847 *had its origin in the congregating together large masses of people at public works and at depots for the distribution of food, and in the overcrowding the workhouses.* I shall now proceed to bring before you some of these illustrations."

He next gives us an analysis of the Poor Law Commissioners' Report, from which some fearfully interesting particulars respecting the progress of disease and mortality in Ireland are brought to light. From this it appears that, while the deaths in our union workhouses amounted to but 159 for the week ending 3rd April, 1846, the number who died in the same localities, during the analagous period in 1847, was as high as 5,706:

" A more fearful fact still is the large increase of sickness, and the large proportion of fever. The number of inmates had a little more than doubled, the numbers being, on the 4th of April, 1846, 50,861; and on the 3rd April, 1847, 106,888; but the numbers in the hospitals increased from 8,121 to 28,239, while the numbers in the fever hospitals increased from 864 to the fearful number of 8,931. The most alarming fact disclosed by these returns is the rate of mortality which existed, and its rapid increase from the previous November. In April, 1846, the weekly rate of mortality was 3 in every 1000 inmates. In November it showed a decided tendency to rise. During the four weeks of December it ran up from 7·4, to 8·6, then to 10·3, and then to 11. In January, 1847, it was 12·2 the first week, 13·3 the last. In February it was 17 the first week, 19·5 the last. In March it ranged from 22 to 20, and in April it rose to 25: twenty-five out of every thousand died in the last week for which there is a return."

The following extract from a letter of Dr. Dillon's, of Castlebar, county Mayo, to the author, is also highly descriptive of the state of the sick poor under the present system of relief:

" The Poor-Law Commissioners have given sad proof of their ignorance of medical police, and total incompetency to direct or be connected with the sanitary state of the country. Wherever their houses were in full operation, there existed disease, and *only there.* We would not open our doors and congregate poverty and filth, when we had not funds to meet its expense; we were, therefore, dismissed and held up to odium; but, thank God, we have spared human life by our decision, and have kept this locality more free from disease than any other union in the kingdom, where the Poor-Law was

in full operation: at the same time, we fed our poor by private sub-
scriptions, and lost fewer from want of food than any other place."

And were further proof necessary to show the deleterious
effects of over-crowding, we need but refer our readers to the
Fever Report now in course of publication in this Journal,
and direct their particular attention to Dr. Crumpe's descrip-
tion of the frighful state of the gaol of Tralee, given in our last
Number.

The principles of Dr. Graves's practice, and the improve-
ments which he has introduced in the treatment of fever, are
now too well known to require description, and too generally
acted on to demand support; therefore, with one or two more
remarks, we may dismiss this portion of the work. On the
subject of bleeding in fever, he believes that venesection may,
when " properly employed under favourable circumstances, and
very soon after seizure," succeed in cutting short the disease;
but at the same time he acknowledges that such cases are
rarely seen by the practitioner, either in hospital or in the pri-
vate walks of the profession :

" Moreover, in entering on the treatment of any case of fever,
you should bear in mind the nature of the prevailing epidemic, and
be careful how you proceed with respect to bleeding; and if you
take away blood, do not go so far as you would if treating a case of
fever under different circumstances, and of a genuine inflammatory
character. I know that many persons have asserted that you can
bleed in all cases of fever, no matter what the state of debility may
be; because this, they say, is only apparent, and depends upon con-
gestion and oppression of vascular action. I do not know how far
this doctrine may be applicable to former epidemics, but in the re-
cent epidemics of fever we have had it certainly does not hold good;
and no man in his senses would think of adopting it as a guide for
his practice. I have seen some of the most intense, dangerous, and
protracted cases of fever commence without any appreciable in-
crease of vascular action, with a soft, slow pulse, a cool skin, no ap-
pearance of congestion of any internal organ; in fact, without any
symptom which would, even in the youngest and most robust ha-
bits, call for the use of the lancet."

On the subject of bleeding in fever we would again refer
our readers to our Fever Report already alluded to. From it
they will learn that the pernicious practice of a general and
almost indiscriminate resort to the lancet in the treatment of
all forms of fever, which some years ago existed, is daily falling
into disuse.

To recommend, in general terms, a work which has now
become a standard authority in medicine in this country, might

seem superfluous; but we cannot too frequently, nor in words too impressive, turn the attention of the Irish practitioner to the opinions and practical experience of this accurate observer, great clinical teacher, and most graphic writer, on the subject of the plague of this country.

Dr. Graves's various improvements in the treatment of fever are moreover too well known and established to be discussed in a review; but before we take leave of this subject we would briefly allude to another topic, as set forth in the nineteenth lecture, a very important one in the management of nearly all our epidemics,—the administration of wine and the phenomena of the heart's action as an index thereto. The readers of our former Series are, no doubt, acquainted with Dr. Stokes's valuable observations on this subject, published in our fifteenth volume. Dr. Graves quotes these at length, but while he agrees in their immense importance in a practical point of view, he still retains his former opinion as to the *cause* of the diminution of the heart's action in typhus fever, believing it to be " affected with debility from the same cause which induces a debility of the voluntary muscles and of the bladder and sphincter ani: that cause is a general prostration of nervous energy." The softening, which is undoubtedly present in the *post mortem* examination of some cases where full action existed during life, he conceives, may be owing to the effect of putrescence, " a process which, it is well known, sets in with great rapidity in cases where death has been caused by any malignant disease." Without entering into the arguments advanced on either side, we must confess we do not think it likely so astute and practised a pathologist as Dr. Stokes would be apt to mistake a *post mortem* appearance for a pathological condition which existed during life, and certainly the amount of softening—"*the weight of the finger*" alone being almost sufficient to penetrate the muscular structure of the heart—appears to have been greater in those cases dissected by Dr. Stokes, than we meet with even in subjects in the most advanced state of putrefaction. And why should the heart alone assume this sudden putrescence ? why not the liver or the spleen, the textures of which organs are naturally so much more friable ? To the practical physician, however, this question is of comparatively little moment. The author has not only fairly but fully stated the views of his colleague, and adds:

" But the fact cannot be denied, that in many cases of typhus the heart becomes weak, that this weakness is manifested by a decrease in the strength of its impulse, or in the intensity of its sounds, or a change in their relative loudness and duration; and though I

have never witnessed these changes without accompanying debility
of the entire muscular system, and other evidences of prostration,
yet I fully agree with Dr. Stokes, '*that in the diminished impulse,
and in the feebleness or extinction of the first sound, we have a new, di-
rect, and important indication for the use of wine in typhus fever,*' and
one from which the junior practitioner in particular will derive the
greatest assistance."

Among the many subjects of interest added to the present
edition is a chapter on sleeplessness in disease, as in jaundice,
dyspepsia, the various forms of delirium, among hypochondriacs
as a result of the irritation from blisters, as well as owing to
grief and mental anxiety, to which we would especially direct
attention.   The following directions are well worthy of being
carefully remembered.

" In cases of sleeplessness, where you have administered an opiate
with effect, be careful to follow it up for some time, and do not rest
satisfied with having given a momentary check to the current of
morbid action.   To arrest it completely, you must persevere in the
same plan of treatment for a few days, until the tendency to sleep
at a fixed hour becomes decidedly established.   You must give an
opiate the next night and the night after, and so on for five or six
nights in succession ; and where the watchfulness has been of an ob-
stinate and persistent character, narcotics must be employed for a
longer period and in undiminished doses.   I do not allude here to
the sleeplessness which accompanies confirmed hectic and other in-
curable diseases ; such cases require a particular mode of treatment,
and generally call for all the varied resources of medicine.   But in
those instances of watchfulness, which are frequently observed to-
wards the termination of acute diseases, it is always necessary to
repeat the opiate for some time after you have succeeded in giving
a check to this symptom.   You need not be afraid of giving succes-
sive opiates, lest the patient should become accustomed to them, and
a bad habit be generated, for the rapid convalescence and renewed
health, which are wonderfully promoted by securing a sound and
refreshing sleep, will soon enable him to dispense with the use of
opiates."

In this country, editions of the works of a living author by
a contemporary of his own are extremely rare, although of great
frequency in America.   There, however, the works are gene-
rally those of European authors, and the editor introduces his
own opinions, additions, comments, and emendations, either
within brackets in the letter-press, or as foot-notes ; thus fre-
quently disfiguring the type, and rendering the perusal exceed-
ingly tiresome and inconvenient to the reader.   Dr. Neligan,
the accomplished editor of this second edition of Graves's Clinical
Medicine, and already so well known to science and litera-

ture(*a*), has, however, avoided this error; he has altered the classification, revised and re-arranged the whole, introducing several of the author's essays, which were omitted in the first edition, and he has added to the practical character of the work by rendering it much more easy of reference. Whatever additions or alterations he introduced have been incorporated with the text; but in this, he says, he has been differently circumstanced from most other editors, having had all through the zealous co-operation and approval of the author. To all concerned in the publication of this great work we think the profession are under a debt of obligation:—to the distinguished and gifted author, the originator of true clinical instruction in this city, and the man who first raised to eminence, *both at home and abroad*, the school of practical medicine in Dublin, of which the lectures and communications now collected into these volumes were the first fruits; to the editor, to whose zeal and practical professional as well as literary experience the present admirably arranged and critically revised work is due; and to the spirited publishers who have brought out the book so creditably in all its departments.

Clinical Observations on the Pathology and Treatment of continued Fever, from Cases occurring in the Medical Practice of St. Bartholomew's Hospital. By EDWARD LATHAM ORMEROD, M. B., Caius College, Cambridge; Licentiate of the Royal College of Physicians; Demonstrator of Morbid Anatomy at St. Bartholomew's Hospital. London, 1848. 8vo. pp. 244.

WE have perused Dr. Ormerod's work with much attention, and although we are quite willing to allow that its merits are considerable, yet in some respects it is evidently deficient. Being aware of the many advantages he enjoyed, and the great zeal and diligence for which he is so distinguished, we concluded that his Clinical Observations would be worthy of St. Bartholomew's Hospital, and of the eminent physicians who superintend the clinique of that institution. These expectations have been but partly fulfilled; and in justice to Dr. Ormerod we shall proceed to state the grounds of our disappointment.

That an author should, in the present day, dwell at such

(*a*) While we write we have received the third American edition of Dr. Neligan's *first* edition of " Medicines and their Uses." Three editions of Dr. Graves's first Irish edition have also appeared in America.

length on the question of the contagiousness and essential na-
ture of fever, appears to us as truly surprising, and is scarcely
less excusable, whether it be the result of ignorance, or an act
of wilful omission.

Had Dr. Ormerod referred to the writings of Cheyne and
Barker, he would have felt that there was no necessity for
again arguing the point whether fever is or is not contagious;
for their classical work has demonstrated the accuracy of the
opinions of those who maintained the affirmative side of the
question. Had Dr. Ormerod also consulted the many valuable
essays published annually by the physicians of Cork-street
Hospital in this city, he would have seen that the essential
character of fever had been completely elucidated by Whitley
Stokes, O'Brien, Grattan, Stoker, Kennedy, and various other
well-known Dublin physicians; and consequently, if he chose
again to discuss either of these subjects, he should have ap-
proached them, not as if he were about to arrive at something
fixed concerning a previously unsettled point, but as if he had
undertaken the investigation rather for the purpose of medical
exercise than in the hope of enlarging the bounds of medical
discoveries.

The third chapter of Dr. Ormerod's book is devoted to
affections of the brain in fever, a general consideration of the
subject, examples of the different forms and symptoms of cere-
bral affections, and their appropriate treatment. This chapter
contains much valuable matter, and the *post mortem* examina-
tions leave no doubt that the opinion entertained by most prac-
titioners in this city is correct, viz., to use Dr. Ormerod's words
in speaking of Case III., " that the cerebral symptoms were
independent of appreciable organic disease in the brain itself."
We are glad to find our own belief thus supported by Dr.
Ormerod's researches, for we are conscientiously convinced that
the opposite theory, which sought to explain the cerebral symp-
toms in fever, and, among the rest, delirium, raving, and sleep-
lessness, by active congestion of the brain, led to most fatal re-
sults in practice; and yet this hypothesis was long maintained
both in the schools in London, Edinburgh, and Paris, and, as
we believe, was first impeached by several distinguished men
in this city. The practical result has been that arteriotomy, ve-
nesection, and other means supposed to be remedial in cerebral
congestion, have become the exception, not the rule, in prac-
tice; and consequently patients who labour under delirium are
now treated only with soothing, or even stimulating and nar-
cotic remedies, which formerly would have been deemed inad-
missible. Strange to say, Dr. Ormerod in this chapter has not

even mentioned the names of Dr. Graves, Dr. Stokes, Dr. Law,
Dr. Corrigan, or other Dublin physicians, who have contributed
the valuable results of their experience on this point; and he
seems quite unaware of the advantages derivable from a judi-
cious combination of tartar emetic and opium in many cases of
delirium and sleeplessness which would otherwise prove fatal.

Dr. Ormerod's fourth chapter is devoted to the affections of
the lungs in fever, and contains several interesting cases, and
many sound and judicious reflections upon the nature and
treatment of pneumonic complications in this disease.

The introductory remarks in this chapter are so deserving
of attention, that we willingly present them to our readers:—

" The complications of fever differ much in kind and degree,
both in different epidemics, as already seen, and also according to
the difference of the season; but the organs contained in the three
great cavities of the body are not affected in exactly the same man-
ner, respectively, by these varying conditions. Affection of the
brain seems almost exclusively connected with the essential nature
of the epidemic; while affection of the lungs appears to depend, in
as great a degree, on the season of the year and external tempera-
ture: and both the season and the nature of the epidemic stand in
close relation to the frequency and severity of affection of the bowels.
Thus, from the present instance in the fever of 1846, most of the
cases of pneumonia occurred during the early part of the year; then,
during the summer, this complication was lost for a while, re-ap-
pearing, with less severity, however, in the colder season of Autumn.

" Pneumonia is the term employed to express the nature of the
affection of the lungs in the following cases narrated in this chapter,
a name which, considering the accurate information possessed con-
cerning the signs and morbid appearances of this disease in its sim-
ple form, it might seem reprehensible to employ here in so loose a
significations as a reference to the details of the dissections in the
fatal cases (X., XII.) displays. Yet it would be representing cases
far otherwise than as they are witnessed, to attempt any more accu-
rate nomenclature, and to dwell separately on bronchitis and pneu-
monia, when, probably, after all, the pulmonary affection in fever is
something intermediate between the two, not exactly referable to
either. In a tabular analysis of cases, where the nice distinctions of
one disease shading into another are lost, and the disease must be
called by one or other name, the difficulty of the diagnosis disap-
pears. The conclusions from numbers are incontrovertible; it is,
therefore, the more necessary, even at the risk of prolixity, or being
thought needlessly to increase the obscurity of the subject, to set
forth as fully as may be all the fallacies which may lurk behind any
numerical inferences, by an examination of the elements which
these numbers represent.

" As to the symptoms during life, bronchitis may appear under

two conditions, either just preceding death, and scarcely distinguish-
able from the tracheal rattle, or at any period as a trivial affection.
A little more severe, and, as the case becomes otherwise of impor-
tance, the disease runs on into something undistinguishable from
pneumonia.

"But this, as far as we can learn, may not be pneumonia, for
here are causes in operation tending to vitiate the conclusions from
all the means of diagnosis at command: first, the tendency of bron-
chitis in fever always to affect the smallest tubes, thus obscuring
the results of auscultation; and next, that of the blood to gravi-
tate to the posterior part of the lungs of debilitated patients lying
on their backs, thus vitiating the inferences from any dulness dis-
covered about the base of the lungs by percussion; add to this, the
difficulty of fairly observing these signs, such as they may be, in
the low forms of fever, and there is an end of all accuracy of diag-
nosis from the symptoms, were even the morbid appearances,
whereby these shortcomings might be made good, most accurately
distinguishable.   But the case is far otherwise, for who shall say,
even in the subject of ordinary disease, where simple congestion
from gravitation, or other causes, ends, and where pneumonia begins.
And yet, close around this indefinable line it is that the changes in
the lungs, during fever, lie.   And when softening, with œdema and
staining of the tissues, have to be allowed for, as well as the fugi-
tive nature of all the changes arising from bronchitis, we shall not
be found to have overrated the difficulties of an accurate discrimi-
nation, either during life or after death from fever, between bron-
chitis, pneumonia, and simple congestion from gravitation(*a*).

"These facts seem to justify the following brief statement, of
general, not of universal application, that the pulmonary affections
of continued fever are not distinguishable, with certainty and accu-
racy, in the majority of severe cases during life, nor, involved as
they are with the most difficult part of the subject, in an anatomi-
cal point of view, after death; but as, at both these periods the
signs and changes respectively approach most nearly to those of
pneumonia, this term, in a somewhat looser signification, however,
than ordinary, seems best applicable to them collectively(*b*).

(*a*) The difficulty of this part of the subject has been fully set forth by
Louis (*Fievre Typhoïde*, tom. i. p. 328–336), who notices, first, that the different
morbid appearances are not different stages of the same process : the form
described under Case x. of this series especially not being explicable, on the
supposition of its being a different stage of the change more commonly no-
ticed after death from fever. Next, as to the common change : it differs from
ordinary hepatization, and never more striking than where the two co-exist,
in colour and texture, and the fluid contained in the substance of the lung is
also different ; but it does not follow the line of the gravitation of the blood,
and is therefore obviously not referable to this alone. The name of splena-
sation is as applicable as any term can be to the morbid changes themselves
(which, it must be recollected, are not peculiar to fever), expressive of an
analogy in their cause to that of hepatisation, but marking the difference of
the results.

(*b*) That bronchitis differing in nothing from the simple form of the dis-

" Were this a question of nomenclature only, it might seem bet-
ter to have passed the matter entirely over without remark, merely
using the general expression of ' affection of the lungs,' instead of the
more limited one of ' pneumonia.' But this would have fallen short
of the object in view; for, as far as a name can influence treatment,
it is desirable that it should do so here; this affection of the lungs,
by whatever name it may be called, is best treated by antiphlogistic
measures, and especially by local depletion, so long as their actual
employment be not forbidden by the other symptoms. Of the names
expressive of such a condition, that which applies most nearly to
the severer cases seems preferable; pneumonia, rather than bron-
chitis, and either than congestion from gravitation, implying, as
that does, the commencement of so hopeless a state, when the phy-
sical is prevailing over the vital force, and the indications are no
longer to treat disease, but to save life. But the mere name should
influence the treatment no further, for it is a fact that the pulmo-
nary affections of fever neither require nor are benefited, under
ordinary circumstances, by the use of mercury.

" Unlike the other complications of fever, pneumonia would
seem to be as much to be dreaded in the relapse as in the first at-
tack, and further, cases of fever, accompanied by pneumonia, or in
which the pulmonary complication is most prominent, are particu-
larly liable to relapses. This fact admits of a very obvious expla-
nation, for, in hospital practice, to which these remarks have almost
exclusive reference, the causes which may act injuriously on the
lungs, such as accidental exposure to cold, the most common cause,
are not so easily guarded against as are those which may act inju-
riously on the brain or the intestines, previously weakened by or
predisposed to disease. The immediate cause of the relapse, in such
a case, lies less in the fever itself, than in the season of the year,
which, first inducing the complications of fever by cold, subse-
quently produces a relapse of fever by the renewed action of the
same cause on an organ now, from having been previously diseased,
the less able to resist the influence."

We regret that we are unable to follow our author further
upon this subject; and we can only remark that the cases are
detailed with clearness, and their treatment in general seems to
be judicious, and as such we recommend them to the attention
of practitioners.

ease and fever may co-exist, I have no intention to deny; the present winter
(1847-8) supplies abundant proof of this fact; but the bronchitis seems to
have no further connexion than that of coincidence with the fever, of which,
in its commencement, progress, and termination, it appears wholly indepen-
dent. Its treatment differs in no respect from that required under ordinary
circumstances, only the fever will, probably, contra-indicate any active mea-
sures. The patient may die of either disease, for the combination is unfavour-
able to both; but if he recover from the fever there still remains to cure the
bronchitis, which is in this respect like the pure pneumonia occurring during
fever, and unlike the mixed pulmonary complication of fever described above.

Dr. Ormerod devotes his fifth and sixth chapters to affections of the bowels in fever, and we are quite willing to admit that upon this subject his reasoning is in general correct. Amongst other cases he details several in which discharge of blood from the bowels took place during the course of fever, and on which he makes in his *resumé* the following observations:

" In four cases, namely the three just detailed, and in Case XXIII., next following, there was more or less abundant discharge of florid blood from the bowels for a limited time, and then it ceased. In three of these cases death followed at an interval of not less than a week, and dissection showed ulceration of the bowels. The fourth got well. Now, without entering fully into the reason of the thing, which could only be discussed after a much more minute examination of the parts adjoining the ulcers than was here instituted, the fact can only be stated. But, leaning on this, it appears that sudden hemorrhage occurring during fever, which there is reason to suppose to arise from ulceration of the bowels, need not cause any great apprehension, beyond the immediate danger of exhaustion, for this appears to have been the cause of death in the two last detailed cases; while in the first, and in Case XXIII., but for the observation of the blood, there was nothing in the symptoms to lead one to suspect even that hemorrhage had taken place. A symptom which should cause much more alarm than the discharge of florid blood from the bowels, is the appearance of black coffee-ground-evacuations, in connexion with its possible causes, as illustrated in Case XXX. The observations of Louis seem entirely to justify this statement. Two marked illustrations of it occurred during the last year, making up, with three cases (XX., XXI., XXII.) here detailed, five of hemorrhage from the bowels."

But it is not to advocate such notions as that because fever patients may suffer accidents the most alarming, and quite beyond our control, and yet get well, either wholly, or at least from the effects of that particular accident, that these remarks are made:

" Even in this profuse bleeding, which assuredly is one of the most frightful symptoms than can present themselves in fever, there is generally time for treatment. The bleeding will not necessarily recur; it depends probably on ulcerations, and the treatment calculated to check the progress of that ulceration is what is to be followed, rather than any plan calculated merely to check the bleeding. Leeches, blisters, and the gradual action of mild mercurials, combined with opium, are to be thought of rather than direct astringents. This is the great indication. Then, keeping in mind that the hemorrhage may have arisen from active congestion rather than ulceration, and so be rather a salutary action than otherwise,

the subsequent amount of stimulants, and indeed the whole subsequent treatment, must be regulated by the indications of strength given by the pulse. For the case is still one of fever, to be studied day by day, in all its particular symptoms, as much as if no hemorrhage had occurred."

We quite agree with the general indications for cure here pointed out by Dr. Ormerod, but we think that he attaches too little importance to the exhibition of direct astringents, which may in general be administered simultaneously with the remedies he recommends, and may contribute, by checking the hemorrhage, to assist the powers of the system, and enable it to repair the lesions of the bowels, which gave rise to the solutions of continuity in the mucous membrane, from which the bleeding points poured forth the contents of the minute vessels. In practice we have certainly seen great advantages arising from the internal administration of acetate of lead in large doses; and in other cases obvious relief has been afforded by small and oft-repeated doses of oil of turpentine, combined with opium. We must conclude this brief review of Dr. Ormerod's treatise by expressing our conviction that he is a young physician from whose pen we expect at a future period valuable contributions to medical science.

On the Influenza, or Epidemic Catarrhal Fever of 1847–8. By THOMAS BEVILL PEACOCK, M. D., Physician to the Royal Free Hospital. London, Churchill. 1848. 8vo. pp. 184.

A PHYSICIAN can scarcely confer a greater boon on his profession than that of furnishing a faithful account of the peculiar characteristics of any epidemic which he may have had favourable opportunities of witnessing. The history of diseases which occur at uncertain, and often at distant intervals, is all-important to the proper understanding of their true pathology; for every outbreak of an epidemic has some distinctive features by which it differs from those that preceded it, and it is only by a careful analysis of the descriptions of accurate observers at different periods, that certain principles, as regards this class of maladies, can be ultimately attained. We are, therefore, inclined to receive with gratitude every addition of this nature to medical literature, and to view it with a partial eye, even should it not come quite up to our critical ideas of what such a publication ought to be.

Dr. Peacock having had much experience of the last epidemic of influenza with which our islands, as well as the greater

part of the globe, were visited, has, in this volume, laid before the profession an account of it as it affected London, describing, " from personal observation, the several forms of the disease, and the course of treatment most effectual for their relief." We are, however, given to understand, that the descriptions must be regarded as applying to the epidemic in its more unfavourable manifestations, the limited accommodation of the Royal Free Hospital, to which the author is physician, admitting of the reception of the more severe cases only, and the persons that apply for admission being mostly in a very destitute condition.

The more immediate subject of the volume is preceded by an introductory review of the commencement and progress of the epidemic in London. It commenced in the month of November, 1847, having been immediately preceded by remittent fever of a low type. Its outbreak was as sudden and general as it usually is ; for, although numerous cases of chest affection, with unusual febrile disturbance, presented themselves as out patients at the Royal Free Hospital during October and November, the number of applicants suddenly increased on Monday, the 22nd, when the fresh recommendations rose from an average of fifty or sixty to 126, the greater proportion being cases of influenza. The same remarkable increase, and from the same cause, occurred on this day also at the Aldersgate-street Dispensary ; and Mr. Stone informed the author that, in Christ's Hospital, nine boys (the first cases) labouring under influenza were admitted into the infirmary on November 21st, thirty-two on the 22nd, and forty-three on the 23rd.

We are here presented with a remarkable illustration of the difference as to the mode of spreading between influenza and cholera. The former, a type of epidemic diseases, suddenly attacks a number of individuals ; the atmosphere is infected, and consequently all those predisposed are rapidly affected ; while the latter creeps slowly on, by infection, from individual to individual, as is so remarkably evidenced in the present visitation, which has now been for many months trying to obtain a footing in the British islands. This fact, we may observe, has not escaped the observation of Dr. Graves, in his recent essays in our pages on the contagion of cholera.

The influenza in London did not disappear as suddenly as it appeared ; although, after the 6th or 8th of December it was not very prevalent, it continued its ravages throughout the early months of 1848, and did not quite cease until April. The registered mortality from this disease, in the metropolitan districts, during the six months from November, 1847, to April,

1848, amounted to 1739; being only four for the week ending November 20th, while they increased to 374 in the week ending December 11th; from this date the decline was gradual until the 1st of April, eight being the number for the week ending that day.

We should wish much, were it in our power, to compare these facts with the mortality of our own city during the same period, when we were also visited with the influenza, but the data are wanting; there is no registration of deaths in Ireland, and, consequently, the statistics of disease, which have so important a bearing on its prevention and treatment, cannot be arrived at with any degree of certainty. England has had the advantage of this knowledge for many years, and the good effects thus obtained are well shown in the valuable quarterly returns of the Registrar-General. May we hope that Government will, ere another session of Parliament elapses, see fit to extend this little expensive, but valuable boon, to our island?

Of the various names proposed for this disease, Dr. Peacock prefers that of influenza, which has been adopted by Mr. Farr, in the Reports of the Registrar-General for England; he also sometimes employs Huxham's appellation, *epidemic catarrhal fever;* but he thinks that *epidemic catarrh*, under which term it has been described by many English writers, associates the disease too closely with the ordinary forms of catarrhal affection. The several varieties of the disease are treated of under the heads,—first, of simple catarrhal fever; secondly, catarrhal fever with pulmonary complication; and thirdly, catarrhal fever with predominant disorder of the abdominal organs.

And here we must at once state our dissent from Dr. Peacock's views as to the immediate connexion which he seems to think, and tries to prove, exists between influenza and fever. The disease, in our experience, has invariably exhibited a much closer resemblance to catarrh, possessing, of course, its own peculiar characteristics, and by which it is so readily distinguished. Were the epidemic to be looked upon as a variety of fever, very erroneous views as to treatment might be deduced, and the correctness of the indications which almost universal experience has confirmed brought in question.

The first form described by Dr. Peacock, under the name of simple catarrhal fever, presents the ordinary features of the disease so familiar to all physicians, differing from common catarrh chiefly in the suddenness of the attack and the characteristic debility of influenza, and, if we take merely the author's description, marked by symptoms sufficiently distinctive from fever. The description of his second form of the epidemic is

derived from twenty-eight cases; in eleven of these the local disease took the form of acute or subacute capillary bronchitis; in four, of bronchitis supervening on tuberculous disease; in six, of bronchitis complicated by disease of the heart or aorta; and in seven, of pneumonia. The features in all—an unnecessarily minute detail of which is given—were those of the local affection altered or modified by the characteristic debility of the influenza. His third form is described from cases in which there was marked derangement of the digestive system. This is of such very common occurrence in influenza that we have always looked upon it as one of the most frequent complications of the disease; and we cannot gather from the author's description sufficient grounds for regarding its presence as distinctive of a special variety of the epidemic, or for the still further subdivision into three classes which he proposes.

In speaking of the nature and causes of influenza Dr. Peacock gives a short and excellent review of the various theories, atmospheric, telluric, electrical, &c., which have been propounded to account for its origin and spread; and, having shown how little certain knowledge we possess on the subject, draws the just conclusion that the disease must for the present be regarded as " involved in the obscurity that veils the origin of epidemics generally." The ordinary predisponents to all epidemic and infectious diseases,— for example, defective drainage, want of cleanliness, over-crowding, impure air, deficient clothing, innutritious or too scanty food, &c.,—he correctly considers as conducing powerfully to the prevalence and fatality of the affection. This opinion, according to the author, has received additional confirmation during the late epidemic, the average weekly mortality for the nine weeks it raged in London being only 980, " while, had the population been as great in the years 1837, 1833, 1743, and 1733, as in 1847, it would have been 914, 914, 1636, and 1677 respectively;" the great difference being, he thinks, to be accounted for by the improved sanitary condition of the metropolis.

In the author's remarks on the treatment of influenza we do not find any novelty; he recognises the necessity of administering tonics and stimulants freely and early, a practice indicated by the special symptoms of the epidemic, and in the present day *almost* universally adopted. We would have omitted the qualifying adverb, were it not for two instances adduced by Dr. Peacock, in illustration of the ill effects of bleeding. Both cases were in young persons,—females, the one five, the other twenty years of age; both were bled from the arm previously to our author seeing them, and both terminated fatally.

In cases of influenza complicated with capillary bronchitis, probably the most fatal form of the disease, we agree with Dr. Peacock that in the second stage, when crepitation is extensively audible over different parts of the lungs, " an attempt should be made to get rid of the redundant secretion from the bronchial tubes by the exhibition of emetics;" but we do not at all agree with his statement that this is " effected with least exhaustion to the patient by the combination of sulphate of zinc with ipecacuanha." In such cases we have found no emetic of such value as mustard; it combines the properties of an emetic and stimulant,—just what is required. Moreover, it does not lose its effect by repetition—and in all such cases we have found its repetition after some hours useful, nor is the amendment produced by it temporary: both of which consequences, the author admits, result from the employment of the combination he proposes.

Most cases of influenza may, we believe, be cut short at their very commencement, but only then, by the administration of a large dose—half a grain—of muriate or acetate of morphia, repeated, if necessary, within three or four hours. This plan of cutting short ordinary catarrh has been known to the profession for many years, and was strongly advocated by Dr. Christison, who brought forward several cases in proof of its efficacy. We have found it equally successful in epidemic catarrh, but in the latter the opiate should be given in a much larger dose. Our experience has, however, convinced us that when the disease is fully established in the system, that is to say, in about twelve hours after the symptoms have appeared, the exhibition of a large opiate is injurious, from its tendency to increase the general debility. We have also seen some cases in the three last epidemics of influenza, which from the very first required the most powerful stimulants, and in which, of course, any opiate was inadmissible. These generally were persons beyond the age of 65, and, with very few exceptions, the disease terminated fatally in from twenty-four to forty-eight hours, with symptoms of *paralysis* of the lungs. This form of influenza has not been sufficiently noticed in the volume before us.

Dr. Peacock concludes his essay with lengthened reports of twenty cases selected to illustrate his remarks, which would have been much better omitted; they add to the bulk of the volume, and cannot prove of the least value to the reader, inasmuch as any information to be deduced from them is contained in the previous pages. The work is chiefly to be valued as containing a faithful history of the late visitation of epidemic influenza as it appeared in the great metropolis, and, therefore, deserves a place amongst all medical works of reference.

On Cancerous and Cancroid Growths.   By JOHN HUGHES BEN-
    NETT, M. D., Professor of Physiology to the University of
    Edinburgh, &c.   Edinburgh, Sutherland and Knox.   1849.
    1 vol. 8vo. pp. 260, with 190 illustrations on wood.

IN the first volume of the New Series of our Journal we pre-
sented our readers with a lengthened analysis of Dr. Walshe's
work on Cancer, as containing all that was then known of this
most important disease; we, at the time, ventured to prophesy
that whatever further knowledge was to be gained as regarded
that malignant production would be due to microscopic inves-
tigation, and that new and improved means of treatment would
be the consequence of the removal of our ignorance by this
means.   Our expectations have been, to a great extent, rea-
lized by the volume now before us; and although we cannot
consider the investigation of this adventitious product yet com-
pleted, the way has been skilfully and clearly pioneered by
Dr. Bennett, and the path of inquiry fairly opened, both for
himself and other observers.

He has divided his work into two parts, in the former of
which, extending to about half the volume, he records illus-
trative cases of cancerous and cancroid growths, with short
commentaries on the particular facts of interest in each; and
in the latter he reviews the present state of our knowledge of
these growths, contrasts prevailing opinions, and offers his de-
ductions from the Observations detailed in the first part.

By the term *cancerous* our author understands that pecu-
liar structure which constitutes undoubted and characteristic
specimens of cancer, as described by him in some of his Obser-
vations, and more accurately defined in the second part of the
essay we are now noticing; and those which so closely resem-
ble, and are continually mistaken for the malignant disease, he
denominates *cancroid*, an appellation first used, in this sense, by
Lebert.   Notwithstanding, however, the extent of the investi-
gations he has carried on, and the numerous cases he has col-
lected,—fifty-six,—in all of which the morbid product has been
examined by himself, Dr. Bennett acknowledges that the facts
he has acquired are as yet " far too limited" to allow him to
clear up with exactitude the contrariety of opinion which pre-
vails on the subject of cancer.

From his previous researches, the reader will not be sur-
prised to find, that Dr. Bennett has specially investigated the
histology of cancer, and the results he has obtained are valu-
able, chiefly in correcting several erroneous notions which

have existed as to the characteristic shape of cancer cells, and the supposed facility with which they may be recognised under the microscope. There appears to be great variety in their appearance, both as regards structure and size, depending, as the author most correctly states, on the process of development of the cell being arrested at different stages of its growth. Their situation, the amount of exudation thrown out, and the pressure to which they may be subjected, also influence, more or less, their character.

" The so-called cancer cell," writes Dr. Bennett, " occurs under numerous forms, presents very different appearances at different times, and is of variable size. The physical characters, so far as I have been able to determine them, are as follows: In form it may be round, oval, caudate, spindle-shaped, oblong, square, heart-shaped, or of various indescribable forms, from pressure on its sides. The external edge is generally sharp and well defined on the field of the microscope. In size it varies in different specimens from the one-hundredth to the one-tenth of a millimetre in diameter. The former size only occurs in a very early stage of its development; the latter only when the cell is old and contains other cells. By far the most common size is where it measures from the one-fiftieth to the one-thirtieth of a millimetre in diameter. It is invariably destitute of colour, except in melanic cancer, when the pigment granules it contains tinge it of a light or dark bistre brown, passing into deep black. The cell-wall when young is smooth and distended ; when old it is more or less corrugated and flaccid. Its contents are various. There is always one nucleus, often two, and sometimes they increase in number from three to nine. Most commonly there is only one, which is round or oval, generally the latter, and contains one or two granules or nucleoli. The nucleus, like the cell itself, varies in size, and may occupy from one-sixth to four-fifths of its volume. Between the nucleus and cell-wall there is a colourless fluid, which, at first transparent, becomes afterwards opalescent from the presence of molecules and granules. Sometimes these are so few as not to impair the transparency of the cell; at others so numerous as to render it more or less opaque. On the addition of water the cell-wall becomes distended by endosmosis, and is enlarged. Lymph and thick mucilage cause it to shrink and contract by exosmosis. When acetic acid is added, the cell-wall becomes more transparent, and in young cells is entirely dissolved, whilst the nucleus, on the other hand, either remains unaffected, or its margin becomes thicker, and its substance more or less contracted. Liquor potassæ reduces the whole to an amorphous mass."—p. 145.

Dr. Bennett next describes the other structures which enter into the composition of cancerous and cancroid growths, as ascertained by the microscope, and also the knowledge acquired by the same means as to their chemical principles.

The latter he divides into four groups, namely: albuminous, fatty, mineral, and pigmentary principles. Their general anatomy is then investigated. He agrees with Dr. Walshe in the division of true cancer into three forms: scirrhous, encephaloid, and colloid. Cancroid growths, he considers, to include, beside the enchondroma of Müller, and epithelial growth of Ecker and Lebert, a third structure, described by himself, and which he proposes to call *fibro-nucleated*. He thinks, also, that inasmuch as fibrous, cartilaginous, fatty, and tubercular formations may be mistaken for cancer by good morbid anatomists, they are, therefore, sometimes cancroid.

Dr. Bennett disagrees with the opinion of Lebert, that the *cancer cell* is pathognomonic of a cancerous growth, and adopts the view of Müller, in thinking that "no single element is diagnostic."

"Nucleated cells, then," he says, "presenting the characters previously attributed to cancer cells, infiltrated among the meshes of a fibrous struma, constitute a tissue to which I give the name of cancerous. Conjoined with the fibres and cells there is invariably associated a viscous fluid, in which the latter, when demonstrated under the microscope, swim. The fibres, the cells, and the viscous fluid, constitute the three essential elements of a cancerous growth; and it is the relative amount of each of these which determines its peculiar form. If the fibrous element be in excess, it constitutes scirrhus or hard cancer; if the cells be numerous, encephaloma or soft cancer; and if the fluid abound and be collected into loculi or little cysts, it is called colloid cancer."—p. 171.

As regards the statistics of cancer to be derived from the observations hitherto published, Dr. Bennett thinks that little reliance is to be placed on conclusions thus deduced, so uncertain has been the knowledge which depended on all other means of diagnosis, unassisted by the microscope, and so admittedly frequent have been the mistakes which were and are still made. And we must agree with him that no one who has not made the histology of morbid productions a special subject of inquiry is qualified to decide between cancerous and cancroid growths; and we would impress on all who have the opportunity (and where is the medical attendant of a public charity who has not), the duty of cultivating a practical knowledge of the employment of the microscope in pathological inquiry. Investigations of this nature are not of such very great difficulty as is generally supposed; they require rather practical experience than a very great amount of skill. An easily managed and good microscope, of sufficiently high power for the purpose, can now be had at a moderate price in any of

our capitals; that of Oberhaüeser, which was first introduced into the British islands by Dr. Bennett, we prefer, as combining all these essentials. We have hopes, ere long, to see this new aid to diagnosis of as general use as auscultation and percussion in the wards of our hospitals, and as generally taught as a branch of clinical instruction. Should such be the case, our author will have the gratification of thinking that he has been the first British physician to give its due position to this branch of medical inquiry.

The chapter on treatment in Dr. Bennett's work, though short, contains many new and important observations. He only notices what he conceives to be the rational methods of cure, whether by retarding the growth of the cancer and thus preventing its development, or by extirpation; the means of prevention are also shortly reviewed.

Under the former head, the rational indication he conceives to be the prevention of cell-growth, which in the vegetable as well as the animal world, is more or less dependent on external circumstances. The proper application of cold and pressure, the absence of moisture—*dryness*, or rather the cutting off a due supply of nutrient fluid—he believes to be the most important; but, unfortunately, these can be said to be useful in external cancer only. So also as regards extirpation, whether by excision or the use of chemical agents, the early employment of the former of which he strongly advocates, while of the latter he is a decided opponent, from an apprehension that the irritation occasioned may excite fresh exudation, and thus extend the disease. The chief novelty in the author's views as to the means of prevention, savours, we think, too much of the theories of the recent chemical school of physicians, in which vital principle is so much overlooked, and the human body regarded as a vast laboratory of inert matter. It may be summed up in a few words, viz.: cancer is an albuminous product, abounding more and more in fat as its cell-growth increases; and accordingly all dietetic substances easily converted into fat, including not only oily matters themselves, but starch and sugar, should not be used by cancerous patients.

Much has been done by Dr. Bennett to clear up the obscurity with which the *exact* diagnosis of true cancer has been enveloped; but a careful perusal of his most valuable volume has only convinced us that very much more still remains to be done before our knowledge of this malignant disease can be perfected. And his researches clearly prove that those who would follow up the subject must be prepared to bestow patient research, long-continued observation, and great mental labour, on the investigation.

Lectures on the Diseases of Infancy and Childhood. By CHARLES
    WEST, M. D., Fellow of the Royal College of Physicians.
    London, Longman and Co.   8vo. pp. 488.

MOST of our readers are doubtless familiar with the lectures of
Dr. West, as they were published in the Medical Gazette; and
such will welcome them in their separate form as a most valu-
able addition to their library in a department hitherto singu-
larly barren.   They are, however, considerably increased in
matter, and more carefully finished, and now present to the
reader a work distinguished by minute accuracy of observation,
extensive pathological investigation, and sound practical in-
struction.

" The observations were made in the large field presented by the
Children's Infirmary, which was first thrown open to me in the
year 1839 by the kindness of my friend, Dr. Willis, then physician
to that institution; to which office I succeeded on his resignation in
1842.   Very nearly 14,000 children have thus been brought under
my notice during the past nine years; and I have kept accurate
notes of the diseases of 600, as well as of the results of 180 dissec-
tions of cases in which those diseases terminated fatally."

The first lecture points out the peculiarities of diseases of
children, the difficulties attending their study, the mode of
overcoming those difficulties, and the rules for the examination
of sick children, &c.; then follow the diseases of the nervous
system, congestion, hemorrhage, inflammatory affections, hy-
drocephalus, simple inflammation, chronic hydrocephalus, hy-
pertrophy, hydrocephaloid disease, diseases of the spinal cord,
trismus, night terrors, epilepsy, chronic paralysis, &c.
    Next we have diseases of the respiratory organs, imperfect
expansion of the lungs, collapse of the lungs, bronchitis, pneu-
monia, œdema of the lungs, gangrene, pleurisy, croup, spasm
of the glottis, hooping-cough, phthisis.
    Diseases of the heart succeed, and then we have those of
digestion and assimilation, dentition, stomatitis, cynanche paro-
tidea, dyspepsia, softening of the stomach, hematemesis, icte-
rus, constipation, diarrhœa, peritonitis, tabes mesenterica,
intestinal worms.
    The diseases of the kidneys include nephritis, calculous
disorders, diabetes, incontinence of urine: and, in conclusion,
we have abdominal tumours, infantile syphilis, remittent fever,
small-pox, chicken-pox, measles, and scarlatina.
    Of the entire volume we have been most highly impressed

with the lectures on diseases of the nervous and respiratory systems, which exhibit great care, acuteness, and research, and we shall select one or two diseases which are less known, or less accurately described by other authors, as specimens of our author's mode of treating his subjects.

"Congestion of the Brain" occupies the third lecture, and after mentioning that Mauthner, of Vienna, found it in 186 out of 229 children whose bodies he examined, Dr. West mentions that the disease may be active or passive, according as it is caused by an increased flow of blood to the head or an arrest of its return. The head symptoms which usher in eruptive fevers illustrate the former, and those which occur in hooping-cough the latter.

"Active cerebral congestion is not a very unusual consequence of the disturbance of the circulation *at the outset of the eruptive fevers.* Convulsions and apoplectic symptoms sometimes come on suddenly in a child previously, to all appearance, in perfect health, and may even terminate in death in less than twenty-four hours. The brain is found loaded with blood, but all the other organs of the body are quite healthy. A year or two ago I was requested to be present at the examination of the body of a boy not quite two years old, who had been in perfect health until the day before his death, which took place under such circumstances as I have before mentioned. The congested state of the cerebral vessels gave but little satisfactory information; but the same evening the brother of the child was taken ill with vomiting, intense fever, and sore throat. In a few hours a red rash appeared. The case was one of scarlet fever, and ran its course with considerable severity, though, happily, to a favourable termination."—p. 22.

Again, similar effects may be produced by exposure to the heat of the sun, of which Dr. West gives an example. Dentition may also give rise to congestion of the brain. Now, as to the symptoms, our author observes :

"Cerebral congestion may, as you have seen, come on very suddenly, its symptoms from the first being alarming, and such as to call for immediate interference; a general uneasiness; a disordered state of the bowels, which are generally, though not invariably, constipated, and feverishness, may have for a few days preceded the more serious attack. The head by degrees becomes hot, the child grows restless and fretful, and seems distressed by light or noise, or sudden motion; and children who are old enough sometimes complain of their head. One little boy, nearly three years old, who died of congestion of the brain, had seemed to suffer for some days before any alarming symptoms came on from pain in the head. He sometimes awoke crying from his sleep, or when awake would suddenly put his hands to his ears, exclaiming, "Oh! hurt, hurt." Usually,

too, vomiting occurs repeatedly; a symptom on the importance of which I have already insisted, since it is not only confirmatory of others, but also may exist before there is any well-marked indication of the head being affected, and when, though the child seems ailing, there is nothing definite about his illness. The degree of fever which attends this condition varies much, and its accessions are irregular, but the pulse is usually much and permanently quickened; and if the skull be unossified, the anterior fontanelle is either tense and prominent, or the brain is full and seems to pulsate forcibly through it. The sleep is disturbed, the child often awakening with a start, while there are occasional twitchings of the muscles of its face or the tendons of its wrist."

This state of things may continue for several days, and may either pass off without treatment, or may proceed to the second stage, or degenerate into acute hydrocephalus. Congestion of the brain is not merely a serious, it is not unfrequently a fatal malady. The drowsiness and heaviness increase; the child is fretful, and somewhat confused when roused; light and sound occasion distress; the bowels are generally constipated, although the vomiting may have ceased. The pulse is smaller and perhaps irregular, though without actual intermission.

" An attack of convulsions sometimes marks the transition from the first to the second stage, or the child passes without any apparent cause from its previous torpor into a state of convulsion, which, subsiding, leaves the torpor deeper than before. The fits return, and death may take place in one of them; or, the torpor growing more profound after each convulsive seizure, the child at length dies comatose."

The treatment, of course, will be modified by the cause; and Dr. West strongly insists upon attention to this point.

" There are, however, but few exceptions to the rule which prescribes the abstraction of blood, either locally or generally, as one of the most important remedies in cases of active cerebral congestion. If the symptoms set in violently, you must deplete freely, and will find that relief will follow more speedily on the abstraction of blood from the jugular vein, than on venesection or the application of leeches. It is not easy to define exactly the quantity of blood which may be drawn, but from two to three ounces would probably be as much as you would ever be warranted in taking from a child a year old; and the appearance of manifest relief to the symptoms should be a signal to you for stopping its flow even before that quantity had been obtained."

It may, of course, be necessary to repeat the bleeding, but a good deal will depend upon the careful observance of regimen and the effect of other remedies. The room should be shaded

and quiet, and cold lotions should be applied to the head. Fomentations of hot water, with a little mustard in it, to the feet, are very useful. A brisk purgative should be given at the outset, and if the convulsions are unchecked or the coma is increasing, Dr. West advises cold affusions, and mentions several cases in which he has used it most successfully.

The bowels must be kept free, and for this purpose Dr. West recommends small doses of calomel two or three times a day, accompanying each powder with " a dose of a mixture containing nitre and sulphate of magnesia." So much for the treatment of the majority of cases; of course each case will require some little modification, and some a considerable deviation.

It would give us much pleasure if we were able to enter upon Dr. West's description of the other diseases of the nervous system, which contain very graphic delineation and very sound practice, but we trust that our readers will peruse them for themselves. We must, however, pass on to the diseases of the lungs, and, omitting the admirable chapters on bronchitis and pneumonia, we shall select Dr. West's account of *pleuritis* for our notice. He agrees as to its frequency with Dr. Battersby, whose admirable paper in this Journal must be fresh in the memory of our readers. It is neither so rare nor so difficult to recognise as many writers have supposed, nor does it differ much in children from the same disease in the adult. The *post mortem* appearances are the same, and

" The most frequent complication is inflammation of the lungs; besides which it occasionally happens, when the left pleura has been the seat of inflammation, that the disease extends to the pericardium, which on two occasions I have found lined with lymph, partially adherent to the heart, and containing sero-purulent fluid."— p. 212.

The symptoms and physical signs are the same at all ages, with some modifications during childhood, and chiefly at the commencement of the disease.

" The history of a case of acute pleurisy in childhood," says Dr. West, " is generally something to this effect: A child previously in perfect health is suddenly attacked with pain, referred to the chest or upper part of the abdomen, so severe as to occasion it to cry aloud, perhaps attended at first with vomiting of a greenish fluid, accompanied with fever, a rapid pulse, and hurried respiration, interrupted by a frequent short cough, which evidently occasions pain, and which the child labours, though in vain, to suppress. After a few hours the severity of the pain subsides, but the fever, hurried respiration, and cough continue, and the child, though usually it looks heavy and seems

drowsy, yet becomes extremely restless at intervals, cries and strug-
gles as if in pain, and violently resists any attempt to alter its posi-
tion, since every movement brings on an exacerbation of its suffer-
ings. The posture which it selects varies much. Sometimes its
breath seems disturbed by any other than an upright position; at
other times it lies on its back or on one side; but, whatever be the
posture, any alteration of it appears to cause much distress, and is
sure to be resisted by the patient. The probabilities are, that if you
auscultate the chest of a child in whom these symptoms exist, you will
hear good breathing through the whole of one lung. On the other
side the air will be most likely found to enter less freely, though
unaccompanied by any moist sound, perhaps unattended by any mor-
bid sound at all; or a rough sound like a rhonchus may be audible
on this side, and for this you may very likely at first take it, though
with more attention it will be discovered to be a friction sound. A
day or two later you will probably detect a sound like that of bron-
chial breathing as you pass your ear from above downward along
the posterior part of the chest, while the friction sound will have
disappeared; and still lower there will be an utter absence of all
sound. The walls of this side of the chest, if their tenderness do
not prevent your trying percussion, will yield a much less resonant
sound than usual, while at the same time a distinct sense of solidity
will be communicated to the fingers."—p. 212.

As the disease advances we have of course the phenomena
of pleurisy developed, diminished mobility and increased size
of the affected side, the protrusion of the intercostal spaces, dis-
placement of the heart, &c. The commencement of the attack
varies sometimes in rather a remarkable manner, the symptoms
being referable more to the head than the chest.

" The child is seized with vomiting, attended with fever and in-
tense headach. It either cries aloud or is delirious at night, or
screams much in its sleep, and, when morning comes, complains
much of its head, but denies having any pain whatever in its chest,
while the short cough and hurried breathing may be thought to be
merely the result of the cerebral disturbance. The diagnosis of cases
of this kind is sometimes very difficult, since auscultation does not
always afford the information that you might expect. It often hap-
pens that no friction sound is perceptible, and that you have no other
indication to guide you aright beside the feebleness of the respira-
tory murmur on the affected side. The child, too, fearful to take a
deep inspiration, fills neither lung completely, so that to a great de-
gree you lose the information gained by a comparison of the breath-
ing in one lung with that of the other. Still the history of the case
will do much towards preserving you from error. The outset of the
illness has been far too acute, attended with far too much febrile
disturbance, for a case of tubercular hydrocephalus, while many of
the signs of cerebral mischief which might be expected in a case of

simple encephalitis have not presented themselves. The heat of the head is not greater than that of the rest of the surface; the crisis with which the disease set in has not ended in coma. It happens but seldom that convulsions mark the commencement of the disease; but if they had occurred at the outset they have not since returned; neither writhing of the muscles, nor strabismus, nor retraction of the head is present; and though the child may cry (as children when ill or fretted often do) at the curtain being undrawn and the candle brought near it, yet there is no real intolerance of light. The dyspnœa, also, is too permanent, and the short, barking cough too frequent, for either to be sympathetic of cerebral disorder."—p. 213.

When the disease has been attacked early, Dr. West has found that nearly all the children recover, the fatal cases being for the most part those which had been neglected until an advanced period. As in adults, bleeding, calomel, and Dover's Powder are the principal remedies. Leeching may be necessary after the general bleeding, and is preferable to cupping on account of the tenderness of the side. If, after active and judicious treatment, the side of the chest remains distended with fluid, Dr. West seems rather inclined to adopt paracentesis. He does not mention counter-irritation, which we have always found most valuable after the acute symptoms have been somewhat subdued.

As our limits do not permit a lengthened notice of this valuable work, we shall, in conclusion, direct our readers' attention to the lecture on jaundice, a disease deserving of more attention than it has generally received. Jaundice is more frequent among immature and unhealthy infants; it rarely occurs in the Dublin Lying-in Hospital, but it is extremely common in the Foundling Hospital at Paris. Again,

" In none is it so often met with, or in such an intense degree, as in infants affected with induration of the cellular tissue, in whom the yellow colour is often so deep as to be manifest in the serum infiltrated into the cellular tissue, or poured into the cavities of the chest or abdomen."

And these examples favour the opinion of those who maintain that in such cases the jaundice is not due to any cause primarily seated in the liver, but rather to the defective respiration and impaired functions of the skin re-acting upon the liver.

It may also arise from malformation or absence of the hepatic or cystic ducts, and such cases end fatally in the course of a few weeks.

" Jaundice may also occur in older children under the same circumstances as in adults, and associated with similar symptoms: the

evacuations being white, the urine high-coloured, and more or less pain and tenderness being experienced in the hypochondriac region. Such cases are most frequently met with during the summer or autumn, especially at times when diarrhœa is prevalent ; the skin sometimes assuming a generally yellow tinge as the purging subsides ; while in other instances the jaundice occurs as an idiopathic affection, though apparently due to the same causes as have produced diarrhœa in other children.

" In the instances that have come under my notice the skin has never assumed a very deep yellow tinge, and the constitutional symptoms have seldom been severe. Now and then, however, considerable febrile disturbance precedes the appearance of the jaundice for two or three days; the skin is dry, though not very hot; vomiting occurs, and the child complains much of headach and dizziness, and rests ill at night, or awakes in a state of alarm. The resemblance between these symptoms and some of those which occur in cases of real cerebral disease is almost sure to excite much apprehension in the mind of the parents, and may even render it difficult for you to form a correct diagnosis. The following circumstances will, however, usually suffice to preserve you from error: The attack has not, in most instances, been preceded by those indications of generally failing health which so often occur during many days before the symptoms of hydrocephalus manifest themselves, and it is not attended either by the anxious expression of countenance, the heat of head, or the intolerance of light, by which cerebral disease is accompanied. Though the sleep may be disturbed it is usually less so than in hydrocephalus, the pulse is less frequent, and though the child vomits occasionally, it does not suffer from constant nausea. When to these symptoms tenderness on pressure in the hypochondriac region is superadded, with the appearance in a day or two of high-coloured urine or white evacuations, and lastly of the yellow tinge of the skin, no further possibility of error remains.

" The treatment of jaundice in the child calls for but very simple remedies. If it be accompanied with much tenderness in the hypochondriac region, a few leeches may be applied in that situation with much advantage. If, however, this be not the case, the employment of small doses of the sulphate of magnesia in combination with the tincture of rhubarb, every four or six hours, with three grains of the hydr. c. cretâ, for a child of five years old, at bed time, will generally suffice to restore the patient to health in the course of four or five days. Should the appetite continue bad, and the child fretful and languid, after the subsidence of the jaundice and the return of the evacuations to a more healthy character, the compound infusion of roses, either alone or in combination with sulphate of magnesia, will be found of much service. In some cases, however, removal to the country or to the sea side appears to be absolutely necessary to the child's complete recovery."—p. 377.

We take leave of Dr. West with great respect for his attain-

ments, a due appreciation of his acute powers of observation, and a deep sense of obligation for this valuable contribution to our professional literature. His book is undoubtedly in many respects the best we possess on diseases of children. The extracts we have given will, we hope, satisfy our readers of its value; and yet in all candour we must say that they are even inferior to some other parts, the length of which prohibited our entering upon them. That the book will shortly be in the hands of most of our readers we do not doubt, and it will give us much pleasure if our strong recommendation of it may contribute towards this result.

An Essay on the Cerebral Affections occurring most commonly in Infancy and Childhood, &c. By Valentine Duke, M. D. Professor of Medical Jurisprudence in the School of the Apothecaries' Hall. Dublin, Fannin and Co. 8vo. pp. 90.

We notice this little work with great pleasure, not only on account of its intrinsic value, but because it is the production of an Irishman, and was awarded the prize by the English Provincial Medical and Surgical Association, in August last. It is pleasant to see science breaking down invidious national distinctions, and claiming brotherhood with our fellow-labourers in the same cause. But it is still pleasanter to feel that this has been done by our fellow-townsman, and that he has won an honourable testimonium from an English tribunal.

After a slight notice of the literature of the subject, Dr. Duke proceeds to consider, shortly, congestion of the brain, irritation or erethism, the hydrencephaloid disease, convulsions, acute meningitis, tubercular meningitis, or acute hydrocephalus, and chronic hydrocephalus. The author has evidently paid considerable attention to each of these subjects, but especially to tubercular meningitis.

The principal section of the Essay is that devoted to acute, tubercular, and chronic meningitis. Acute meningitis Dr. Duke thinks comparatively rare in this country, but then he regards it as distinct from hydrocephalus. Among the causes he mentions it as preceding the eruption of small-pox, and as following the sudden suppression of a discharge from the ear.

In the convulsive form, the disease generally commences with convulsions, followed by febrile disturbance, but with less vomiting and constipation than in the phrenitic form, which generally begins with a rigor, followed by fever and vomiting, with headach, intolerance of light and sound, quick pulse, hot

and burning skin, &c.; the intellect is soon disturbed, and we have delirium alternating with stupor and convulsions. The symptoms rapidly increase, and if not arrested by treatment,

" The convulsions become more frequent and severe, with grinding of the teeth, strabismus, dilated pupil, and coma. When it is protracted, hemiplegia is sometimes present, and occasionally spasms of the muscles of the arms and legs; these latter more particularly when there has been an extension of the diseased action to the spine."
—p. 23.

Dr. Duke is an advocate for blood-letting in this disease, but he does not seem impressed with the advantage of (comparatively) large bleeding at the commencement. We know of no disease in which it is so useful, and without which the treatment is so unpromising. Purgatives, especially in the convulsive form of the disease, enemata, lancing the gums, tartar emetic, and warm baths, are strongly recommended. The author speaks highly of the benefit of " nausea, kept up for some hours." In addition, we are advised to use mercury, counter-irritants, and ice to the head, and, if necessary, small doses of Dover's Powder in combination with the calomel.

Dr. Duke commences his notice of tubercular meningitis by a cursory review of the writers thereon, and, in conclusion, fixes upon the work of the late Dr. Cheyne, as " by far the clearest, most concise, and, withal, most true to nature," of any with which he is acquainted; and he adopts and extracts the description of the different varieties given by this author.

As regards the symptoms, we cannot say that Dr. Duke has added anything to our previous knowledge; nor is this surprising, after the numerous and valuable treatises which have appeared upon the subject. He very justly enumerates the nervous symptoms as being those which give the earliest intimation of mischief; such, for instance, as the restlessness and irritability, variations of temper, intolerance of light and noise, irregular pains, screaming during sleep, pain in the head, &c. The difficulty is to determine whether these are the precursors of meningitis, or of some other febrile attack of less consequence.

Dr. Duke has laid down the diagnosis between the present disease and simple acute meningitis, meningeal apoplexy, cerebral hemorrhage, hypertrophy of the brain, convulsions, typhus, and remittent fever, &c. We should have preferred a little more detail on some of these points, because of the difficulty which every one must have experienced thereon in practice.

In treating these cases Dr. Duke considers that the usual

antiphlogistic means, such as bleeding, mercury, &c., are less admissible, and less likely to be successful. He almost always commences the treatment of a suspected case by giving an emetic of ipecacuanha or tartar emetic, and with great benefit and perfect safety. Purgatives are to be used but sparingly; calomel and jalap, or rhubarb, or senna; or, in cases where there is much irritability of stomach, half a drop of " Short's" croton oil will be the best, preceded by a purgative enema.

These evacuations having been premised, the propriety of blood-letting comes to be considered. This will depend upon the strength of the child and the amount of inflammatory symptoms; if these are marked, blood-letting will be indicated. Dr. Duke recommends the application of leeches to the mastoid process or to the temples, and, in some very acute cases, bleeding from the arm. Mercury, of course, should be given, and its effects are good, but not marked, as in some other inflammatory diseases. Calomel with opium, or mercury with chalk, or magnesia with James's Powder and Dover's Powder, are preferred by the author. Next to these remedies come counter-irritants to the head, cold applications, fomentations to the feet or abdomen, &c.

Dr. Duke states that he has tried iodine in these cases, but cannot "speak very decidedly of any success fairly attributable to its use."

We have thus shortly run through this essay; we should gladly have entered into more detail had our limits permitted. It contains a considerable amount of information, and very excellent practical suggestions, simply and unostentatiously written, and we trust that its success will encourage Dr. Duke to persevere in the course of investigation upon which he has entered.

The following extract from the section on "Irritation or Erethism of the Brain," will convey to our readers some notion of the author's style and mode of treating his subject:

" Morbid irritation or erethism of the brain is also sometimes met with among infants, especially in large cities. It is characterized by an increased irritability of the sensorium, and susceptibility to impressions; noise and light are equally disagreeable, and the child is uneasy and fretful. The eye-lids are generally closed, and the flexion of the thumb on the palm of the hand, so well known to nurses, is constantly observed. The child is generally very watchful, and gets little sleep. There is not any complaint of pain in the head, nor is there any increased frequency of pulse or heat of skin.

" This affection is generally attendant upon dentition in delicate children, and may arise in them from any debilitating cause. I have

seen it occur after remittent fever, long protracted, and also after diarrhœa. If this state of morbid irritation should exist long, hydrocephalus might be induced. Congestion of the brain, which we have already spoken of, and the hydrencephaloid disease, to be hereafter described, have many symptoms in common with erethism. The watchfulness and extreme sensibility will contrast with the stupor and tendency to coma in the former.

" Our principal efforts must be directed to allay irritability and procure sleep; we must also be careful to support the strength by light nourishment; but stimulants, as wine, must be avoided. The bowels must be evacuated by enemata and mild aperients; cold also should be assiduously applied to the head, and warm stupes to the feet. A very nice method of applying the latter is by means of flannel wrung out of hot water, rolled round the legs and feet, this again being wrapped up in a warm, dry piece of flannel, or small blanket. I have frequently known this produce sleep in many affections of childhood, and it has the recommendation of disturbing the child very little, and is applicable in cases where the fatigue of a general warm bath would be too great.

" Nothing will sooner relieve our patient, and assist the means we prescribe, than change of air. It really acts sometimes magically, as all who have seen much of the diseases of children can vouch.

" Sometimes it may be necessary to have recourse to the use of opium, which, if cautiously and prudently administered, will prove a useful assistant in breaking the habit of wakefulness and procuring sleep."—p. 11.

On the Nature of Limbs. A Discourse delivered at an Evening Meeting of the Royal Institution of Great Britain. By RICHARD OWEN, F. R. S. London, Van Voorst. 1849. 8vo. pp. 119.

The Homologies of the Human Skeleton. By HOLMES COOTE, F. R. C. S. E., Demonstrator of Anatomy at St. Bartholomew's Hospital. London, Highley. 1849. 8vo. pp. 100.

WERE we asked the grand characteristic by which the organic sciences, as studied at the present day, are distinguished from those same sciences as they presented themselves some very few years ago, we would have no hesitation in pointing to two great features which eminently mark the existing condition of biology,—placing it in a position far in advance of the state of science at a comparatively recent period, and producing results which appear utterly disproportionate to the time during which their influence has operated.

The features to which we allude are, first, the general recognition of metamorphosis or developmental phenomena as a

condition of all organic beings; and, secondly, the perception of homological relation, or the determination of the nature and import of organs. The second, indeed, of these great means of arriving at truth involves, to a certain extent, the first, which either becomes itself the grand source from which the homological relations of an organ must be determined, or else corroborates the conclusions derived from other and independent sources.

By the doctrine of homologies a new and startling interest is thrown over apparently the most unimportant objects ;—a minute process on a bone, the detection of a speck of cartilage, the discovery of a scarcely perceptible foramen or fissure, may be full of significance ; and the dry and barren facts of the descriptive anatomy of a few years ago have, in the new direction which has been given to organic research, assumed an importance which could never have been anticipated, have combined themselves into a grand formula by which we interrogate Nature in her most secret operations, and extort from her the mysteries of morphologic law.

It is now nearly half a century since the celebrated Oken, during a walk in the Hartz Forest, observed upon the ground the blanched and weather-beaten skull of a deer. The deep-thinking naturalist took it up and contemplated it for a moment; a strange idea flashed upon him with all the power of a mighty truth, and by, as he himself tells us, a kind of " inspiration." " It is a vertebral column !" he exclaimed ; and from that moment a new impulse and a new direction was given to the study of organization.

The doctrines of homology, however, were long only in their infancy, and took many a wrong path, and made many a stumble, during this early period of their growth. Oken, in the development of his original idea, maintained that the entire body of a vertebrate animal was exactly repeated in the head, that the upper jaw corresponded to the two fore limbs united at the symphysis; the lower jaw to the two hind limbs similarly joined; the teeth to the nails; while the abdomen, thorax, intestines, lungs, &c., were also all represented in the head. It was reserved to a later period, and to the researches especially of our own Owen, to point out the true homological import of the parts thus incorrectly viewed by the German philosopher.

One of the most important steps in the determination of the true nature of organs is the conception of an ideal *archetype*, in accordance with which every member of some great natural group is constructed, and from which, by excess or defect of development, or by other easily comprehended change, but

never by the addition of new elements, we may deduce every form presented by the group for which our archetype has been imagined. Let us, however, not be misunderstood; the framing of the archetype is not the first but almost the last step in our homological inquiries. Our typical animal or plant must not be constructed from any vague notion of what the archetype *ought* to be, and then be employed as a standard with which all our conceptions of the nature of organs must correspond. It is only by laborious comparison of the existing organs in all their modifications, by seizing on the constant element in each, and carefully eliminating all that is non-essential, that we are at last enabled to construct our archetypal organism, which then becomes the true general expression for the organic group from which, by the above process, we have derived it. Such an archetype has been framed by Professor Owen for the great vertebral series, and the student will do well to impress its form on his memory. We shall now proceed to examine the results to which this distinguished zoologist has been led in his attempt to explain the signification of the parts composing the endoskeleton of the vertebrata.

The vertebral skeleton may be viewed as composed of a number of distinct but essentially similar segments arranged in succession from the anterior to the posterior end of the body. Each of these segments is called a *vertebra*, a term, however, here used in a much more definite sense than that which the human anatomist is in the habit of applying to it. Every complete vertebra or segment of the skeleton consists of a *centrum* or body, and of two arches, one, the *neural arch*, passing backwards for the formation of the canal destined for the protection of the spinal cord; the other, the *hæmal arch*, directed forwards for the protection of the great vascular centres. The neural arch is formed on each side by an element originally distinct, which in the terminology required by this new mode of viewing the subject, is called *neurapophysis*, and it is completed behind by a piece of bone called the *neural spine*. The walls of the hæmal arch are in like manner formed by a pair of elements called *hæmapophyses*, and closed in by a *hæmal spine*. Another important pair of elements likewise exists in the composition of the typical vertebra; these are termed *pleurapophyses*. In those parts of the hæmal arch which are especially dilated by the development of the great vascular centres the pleurapophyses become increased in length, and intervening between the centrum and hæmapophyses, separate the latter from their attachment to the centrum, and then, assisting in the formation of the great cavity which protects the heart and other enlarged portions of the

vascular system, are commonly known as ribs; while the hæ-mapophyses, thus pushed outwards from their attachment to the bodies of the vertebræ become the costal cartilages or sternal ribs, and the sternum itself must be viewed as the coalesced hæmal spines of all the vertebræ thus modified. Besides the elements now mentioned as constituting the typical vertebra, namely, the centrum, neurapophyses, pleurapophyses, hæma-pophyses, and neural and hæmal spines, processes of a secon-dary or derivative character more or less complicate it, but these are not essential, and need not now be taken into consi-deration.

There is, however, another very important element which we must consider as part of the primitive segment or vertebra. This is a diverging appendage or ray which is borne by the hæ-mal arch. It may be seen in the thoracic segments of birds and crocodiles, and in fishes. It is less constant than its supporting arch, but is yet, as we shall presently see, full of significance.

Having thus determined the construction of a primitive segment of the skeleton, we are at once prepared to enter upon the consideration of the main subject to which Professor Owen's work is devoted,—the nature or signification of limbs. Now under whatever form the limbs of vertebrate animals exist, they are invariably borne upon inverted arches; that which supports the anterior limbs is the scapular arch, that supporting the pos-terior the pelvic arch. The scapular arch, in its typical condi-tion, consists of a pair of " scapulæ," of two bones specially termed " coracoids," which converge towards each other, and uniting with the " sternum" below, thus complete the inverted arch.

The question now presents itself, to what elements of the primary segment are we to refer the arch thus constituted ? It can be shown to be the detached hæmal arch of a vertebra, the scapulæ being the pleurapophyses or vertebral ribs, the cora-coids, the hæmapophyses or sternal ribs, and the sternum, the hæmal spine. But here again it will be asked, from what par-ticular centrum has this hæmal arch wandered ? To which of of all the segments of the skeleton are we to refer it as its pro-per home ? We have already seen that one of the first steps in this great department of anatomical research was the compa-rison of the skull to a vertebral column; and accurate observa-tion has now proved that the skull is really composed of four vertebræ, with the neural arches expanded and otherwise mo-dified for the protection of the brain. Now the occipital or fourth cranial vertebra is, except in a single class, composed of a centrum and neural arch alone, without any trace of hæmal

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arch; here, then, is an anomalous condition for which an expla-
nation must be sought, and this explanation is at once afforded
by the hypothesis that the scapular arch belongs in reality to
the occipital vertebra, that it is truly the hæmal arch of this
vertebra, having been dislocated from its typical attachment and
displaced backwards so as to occupy the place in which we find
it in mammals, birds, and reptiles. In fishes, the one excep-
tional class above referred to, the scapular arch occupies its
normal position, and is there actually the hæmal arch of the
occipital vertebra.

We have here made no allusion to the clavicle. This bone,
indeed, though so highly developed in man, with whom the
coracoids are reduced to the condition of mere processes of the
sternum, is yet very inconstant, and forms no element of the
scapular arch. Strong reasons, into which we cannot now
enter, are adduced by our author to prove that the clavicle is
the displaced hæmapophysis of the atlas or first cervical vetebra.

So much, then, for the true signification of the scapular arch.
Our limited space has, indeed, obliged us to confine ourselves
to a mere statement of the results; for the arguments and com-
parisons on which these results are founded, we must refer to
the work itself. The pelvic arch may, in like manner, be
shown to be the hæmal arch of one of the sacral vertebræ; and
its different elements admit of an exact comparison with those
of the anterior or scapular arch.

Having thus briefly considered the anterior and posterior
sustaining arches, we are at once led to the examination of the
limbs themselves, for whose support these arches are so singu-
larly fitted. We have seen that the typical segment is compli-
cated by the existence of a pair of diverging appendages borne
upon some part of the hæmal arch. This may be well seen in
birds, where the appendage exists under the form of a flat pro-
cess of bone, projecting backwards from each rib, so as to over-
lap the rib which lies immediately behind. Now, these di-
verging appendages may be homologically viewed as rudimental
limbs, and the fore and hind true limbs as the specially deve-
loped appendages of their respective supporting arches. We may,
indeed, from the simple ray of the lepidosiren, which no one
doubts to be the homologue not only of the pectoral or ventral
fin of other fishes, but also of the anterior or posterior limbs of
the higher vertebrates, and which presents a condition scarcely
in advance of that of the costal appendages of birds,—we may,
from this primitive limb, trace a gradual complication by divi-
sion and development, but not by the addition of new parts,
through the still comparatively simple limbs of the proteus and

amphiuma, and the almost ray-like limbs of the monodactyle horse, up to the highly developed superior and inferior extremities of man.

Thus, by a series of most beautiful and ingenious comparisons, and by a rigidly logical treatment of his subject, has our author arrived, in the beautiful " discourse" now before us, at conclusions which, were we not already aware of his labours in this most pregnant department of research, would come upon us with a startling sense of their strangeness and utter repugnance to our old anthropotomical studies:

" If it be admitted that the upper limb (arm and hand) of man is the homologue of the fore-limb of the amphiume, of the pectoral fin of the fish, and of the pectoral ray of the lepidosiren, it follows that, like the latter, it must also be the 'diverging appendage' of the arch called ' scapular,' which is the hæmal arch of the occipital vertebra; and, therefore, however strange or paradoxical the proposition may sound, that the scapular arch and its appendages, down to the last phalanx of the little finger, are truly and essentially bones of the skull."—p. 112.

We would willingly dwell much longer on this ingenious and elegant contribution to organic science; we would gladly enter into a further detail, not only of the truths of general and special homology which it contains, but of those of *serial* homology; of the comparison, for instance, of the anterior with the posterior limbs, and the correspondence which is shown to exist in the most minute details, not only of the limbs themselves, but of their sustaining arches. The space, however, at our disposal, obliges us to take a reluctant leave of a book from whose perusal we have derived unalloyed pleasure, while we heartily recommend to all our readers the " Discourse on the Nature of Limbs," as not only presenting them with new and beautiful views of the structure of living beings, but also placing in their hands a powerful instrument in the further search after biological truth.

The discoveries of Owen could not fail to excite, among British anatomists, a general taste for that philosophical pursuit of anatomy in which he has been so distinguished a leader; and we are heartily pleased to see an attempt made to introduce the homological principle into our schools. We well recollect the feelings of mental fatigue with which we used to listen to the wearisome demonstration of the skeleton during our early anatomical studies. All, however, is now changed; the minute and dry details of osseous anatomy, which for us had no meaning beyond that of a tax on the already over-taxed memory, are to the homologist full of lucid

significance; and we feel confident that both student and teacher will have reason to rejoice in the appearance of Mr. Coote's little work. The main object of the book is the placing before the student a connected view of the homologies of the human skeleton, as pointed out by Owen and the continental anatomists. The author does not aim at original matter, but the established facts are brought together with a clearness and conciseness which it has not often been our lot to meet. We regard the present, indeed, as a most useful book; and with the works of Owen and Coote before us there can surely be no longer any reason why a philosophical anatomy shall not constitute, in these countries, as it has done abroad, an essential part of the education of the student of organic science.

The Natural History of Ireland. Vol. I.—Birds. Comprising the Orders Raptores and Insessores. By WILLIAM THOMPSON, Esq., President of the Natural History and Philosophical Society of Belfast, &c. London, Reeve. 1849. 8vo. pp. 434.

DURING the last twenty years the name of Thompson has been of frequent recurrence in the pages of natural history. To Mr. J. V. Thompson, whose researches were made and published at Cork, naturalists are indebted for a description of the singular transformations which the *Crustacea* and *Cirrhipeda* undergo in their progress to maturity; thus revealing facts so opposed to the pre-existing state of opinion that they necessarily involved entirely new views of the classification and affinities of these two classes of articulated animals. To Mr. William Thompson, of Belfast, naturalists are in like manner under obligation for an extensive series of papers of great originality and value, published in the "Proceedings" and "Transactions" of several societies, or in the pages of scientific journals, and continued for many successive years.

The papers of Mr. W. Thompson, to which we have just referred, and which amount to between ninety and one hundred, are of a very diversified character, and (with the exception of insects) range through all classes of the animal kingdom. Some of them embody copious information regarding habits and distribution; others define with minute detail species which had not until then been described, or note the occurrence of such as were known in other countries, but not registered as Irish. The number of species thus added to our Fauna by the contributions of Mr. W. Thompson may probably form an aggregate of not less than 700; in other words, we have by these

publications been made aware of 700 species of animals, known now as permanent residents or occasional visitants, the existence of which in Ireland was previously unrecorded.

These papers evince on the part of their author accurate observation, nice discrimination of species, care in the noting of all details, and a scrupulous desire to give to others their due meed of acknowledgment and obligation. It is no wonder, therefore, that they should have been highly prized by the naturalists of these countries, and that many of them should have been translated and republished in foreign journals.

Being aware of these circumstances, it was with peculiar pleasure we heard some time since that Mr. W. Thompson was about to collect into one systematic work the papers which had been appearing at intervals through a period of many years ; that he was about to give them the advantage of his own careful revision, to arrange them on a uniform plan, and to embody those additional facts which the lapse of time had placed within his reach, or which the proper exposition of the subject might seem to demand. This labour has in good earnest been commenced, and the first volume now lies before us. We wished to make our readers fully acquainted with the design as a whole, and with the spirit and contents of that portion of it which is now completed ; and we felt we could not more effectually prepare them for our communication, than by this brief reference to the previous labours of our distinguished countryman.

The present volume treats only of birds, and those of only two orders, the *Raptores* and *Insessores ;* or, in other words, of the birds of prey and the perching birds. It is stated in the preface that " the volumes on birds are put forward merely as supplementary to the several excellent works already published on British ornithology." Hence, as the necessity for specific details regarding form and plumage does not exist, they are omitted, except in birds of rare occurrence, such as the " rose-coloured pastor." We could have wished in some instances that names and dates could have in like manner been dispensed with, or more sparingly introduced, for they sometimes break the continuity of the style and of the narrative. On the other hand, it is but fair to remark that they form a portion of the evidence for the facts adduced, and on them must the value of the record in some cases depend. Perhaps a little more of condensation, and a more frequent use of foot-notes, might do all that is desired.

We have another suggestion to offer. We think that the

interest attaching to the occurrence of some of the rarer species might have been greatly enhanced, to the generality of readers, by the addition of a few particulars respecting their usual range, in what countries they "most do congregate," and by what habits they are distinguished. Having offered these two suggestions for the candid consideration of the author in his future volumes, we frankly own there is but little else in the contents of the book at which we can justly cavil; and we turn to what is the more pleasant part of our editorial duty.

Viewed with reference to man, birds present many interesting matters for consideration. They are greatly affected by those modifications of land, of water, and vegetable growth, brought about by the agency of human labour. On this subject Mr. Thompson remarks:

" I have remarked this particularly at one locality near Belfast, situated 500 feet above the sea, and backed by hills rising to 800 feet. Marshy ground, the abode of little else than the snipe, became drained, and that species was consequently expelled. As cultivation advanced, the numerous species of small birds attendant on it, became visitors, and plantations soon made them inhabitants of the place. The land-rail soon haunted the meadows; the quail and the partridge, the fields of grain. A pond, covering less than an acre of ground, tempted annually, for the first few years, a pair of the graceful and handsome sandpipers (*Totanus hypoleucos*), which, with their brood, appeared at the end of July or beginning of August, on their way to the sea-side from their breeding haunt. This was in a moor about a mile distant, where a pair annually bred until driven away by drainage rendering it unsuitable. The pond was supplied by streams descending from the mountains through wild and rocky glens, the favourite haunt of the water-ouzel, which visited its margin daily throughout the year. When the willows planted at the water's edge had attained a goodly size, the splendid kingfisher occasionally visited it during autumn. Rarely do the water-ouzel and kingfisher meet ' to drink at the same pool,' but here they did so. So soon as there was sufficient cover for the water-hen (*Gallinula chloropus*), it, an unbidden but most welcome guest, appeared and took up its permanent abode; a number of them frequently joining the poultry in the farm-yard at their repast."

The *distribution* of the species throughout Ireland is told in a few brief but discriminating words placed at the heading of each chapter, immediately under the name of the bird, and readily catching the eye, both by situation and by the size of the type employed. The author has travelled over a large portion of the Continent of Europe, and always with his observant powers on the alert. Hence he has been enabled to record the appearance

in foreign localities of many species which in our minds are associated with thoughts of home. It is pleasant to find these feathered denizens of our woods and plains occupying a wider range of territory than in our home-cultured notions we had thought fit to assign to them.

" I have heard," says Mr. Thompson, " the call of the cuckoo in the king's park at the Hague, towards the end of May, and in Switzerland, late in June. Its well-known cry was most gratifying to my ear, when (on the 16th of May) riding over the bare wild hills and through the forest between Constantinople and the picturesque village of Belgrade,—once the residence of Lady Mary Wortley Montague."

In like manner the occurrence of the jay is mentioned in Switzerland, that of the hoopoe at Aix-la-Chapelle; and several species as alighting on board the *Beacon* when in or near the Morea. Such notices, brief as they are, now and then awaken a host of classic associations. Take as an example the words: " The ruins of Rome are, as may be supposed, a fine locality for the white owl. From the Coliseum, tomb of Cecilia Metella, &c., I have startled it from its mid-day repose." Such in fact is the influence of such scenes, that the author now and then forsakes the didactic style of composition for one more in unison with the glow and beauty which he describes. Thus :

" I have had the gratification of seeing the bee-eater in scenes with which its brilliant plumage was more in harmony than with any in the British Isles. It first excited my admiration in August, 1826, when visiting the celebrated grotto of Egeria, near Rome. On approaching this classic spot, several of these birds, in rapid, swift-like flight, swept closely past and around us, uttering their peculiar call, and with their graceful form and brilliant colours proved irresistibly attractive. My companion, who, as well as myself, beheld them for the first time, was so greatly struck with the beauty of their plumage and bold, sweeping flight, as to term them the presiding deities over Egeria's Grotto. Rich as was the spot in historical and poetical associations, it was not less so in pictorial charms ; all was in admirable keeping:—the picturesque grotto, with its ivy-mantled entrance and gushing spring; the gracefully reclining, though headless, white marble statue of the nymph; the sides of the grotto covered with the exquisitely beautiful maiden-hair fern in the richest luxuriance; the wilderness of wild flowers around the exterior, attracting the bees, on which the *Merops* was feeding; and over all, the deep blue sky of Rome completing the picture."

The *migration* of birds, that mysterious subject, about which so many have written, and which no one can be said fully to

understand, receives its due share of attention, and the times of arrival and of departure are noted with great care. Never have we seen the different species of swallows described with the same fulness as here ; we have the haunts, the habits, and the aspect of each. In point of interest and novelty we do not know that any fifty consecutive pages of the work can be regarded as superior to this portion ; and we make this remark after a careful perusal of what many will regard as the most popular portion, that which treats of the eagles and falcons. The snowy owl had, we knew, been occasionally taken in Ireland, but that it had been seen at any time or place in large flocks, and as a migratory species, was a fact for which we were not prepared. The passage in which the evidence is detailed (p. 102) is too long for extract; we must, therefore, refer our readers to the work itself. And if once they get hold of the volume, we think they will not readily lay it down ; for while it contains the precise information which the ornithologist demands, it brings forward topics which are both of popular and scientific interest, such as the geographical distribution of species, the causes which seem to operate on their increase and decrease, their migrations, their uses to man, the occasional injuries they inflict, and the important benefits they confer. We may add to this that habits are dwelt upon in a manner so amusing, that we have known extracts from the book to be read aloud to a delighted circle of children. The story of the pet magpie, p. 334, is replete with humour; and that of the three robins, " Cresty," " Terry," and " Big-eye" (p. 167), is so admirable a piece of animal biography, that it is worthy of being placed along with that of the poet Cowper's three hares. The magpie story is by a learned Irish professor, who has not, 'mid his scientific research, lost his native relish for " fun ;" and the history of the robins, we are glad to say, is from the pen of one of our fair countrywomen.

While Mr. Thompson was embellishing his work with those interesting anecdotes of birds, illustrative of their manners, habits, affections, and profundities, it is to be regretted that he did not still further increase its value,—to the Irish reader certainly, perhaps to all his readers,—by giving some account of the superstitions attaching to many of our well-known birds. Thus, how much may be written on the superstitions connected with the raven, the magpie, the robin, and the cuckoo. In the instances of the wren and the swallow only has he alluded to this subject.

There is another topic, arising out of the foregoing, to which

we are glad to find Mr. Thompson's attention has been directed ; that is, the Irish names for our native animals. We know that several of those names are very significant, often expressive of the peculiarities or habits of the creature, and could easily be procured from the Irish-speaking peasant or the Gaelic scholar. In the vast collection of Irish manuscript literature now undergoing examination we find frequent mention of the animals proper to this country in former times, and many curious mythical legends attached to them. It would, in our opinion, add to the completeness of the author's labours if he would investigate this subject. Some years ago Mr. Eugene Curry, one of the first Irish scholars of the day, discovered, among the Irish manuscripts belonging to the Royal Irish Academy, a very curious zoological and topographical poem, believed to be as old as the fifth century, in which our animals are enumerated. The history of it is this:—The celebrated Irish champion, Finn Mac Coole is made prisoner by Cormac Mac Art, monarch of Erin, who, however, consents to liberate him for a ransom of two of every wild animal in Ireland, which were to be brought to him to the green of Tara. Cailte, one of Finn's officers, undertook and succeeded in this apparently hopeless task, and in the poem alluded to related to St. Patrick the result of his mission. A brief notice of this tract was communicated to the Royal Irish Academy by Mr. Ball, in February, 1844, but we have not heard anything of it since. We know that Mr. M'Adam of Belfast possesses another and a most perfect copy of this poem, and we are sure he would willingly assist his townsman in the investigation of the Irish names. Many of the names of animals recorded in this very ancient manuscript are now unknown, but no doubt several could be recovered if the subject was thoroughly investigated.

Mr. Thompson promises " to furnish a carefully drawn up list of the Irish names of native birds, for the concluding volume." We confess we should rather see them introduced into the text, both of the succeeding volume and all future editions of this.

The space we have devoted to this volume tells, more plainly than any commendation we could employ, our high appreciation of its merits. It is a standard work, and will naturally rank with those of our first ornithologists. We trust that " The Birds" will ere long be completed, and that the success of that publication may secure to us the continuance of the entire series ; so that all the materials which the author has for a quarter of a century been collecting with such ceaseless assiduity may be secured for the permanent advancement of sci-

entific knowledge, and for the honour of that country whose
Fauna they are so well fitted to illustrate.

The work is very well " got up," but we think the pub-
lishers have placed rather too high a price upon it; we trust
the succeeding volumes will be cheaper.

Pathology of the Human Eye.   By JOHN DALRYMPLE, F.R.C.S.
London, Churchill.   1849.   Small folio.   Fasc. 1.

" THERE are no diseases to which our bodies are liable, more im-
portant than those affecting the organ of vision; none whose speedy
relief is more essential to the comfort and usefulness, nay, even to
the safety of the patient, or which require more intelligent diag-
nosis, greater decision of treatment, and more thorough medical
information.   Thus, though ophthalmic maladies have, to a certain
extent, been made *specialities*, yet in all times have they attracted
the attention of the most eminent of our general physicians and sur-
geons, and within the present century have been almost wholly
wrested from the hands of the empiric.   It will not, therefore, be a
matter of surprise that our medical literature should have been en-
riched by systems and treatises especially devoted to this branch of
surgery, and that the most distinguished authorities in medicine
should have contributed their quota to the general stock."

The foregoing observations form the opening paragraph in
the introduction to the most truly valuable work upon the pa-
thology of the human eye which has yet appeared in Great
Britain, perhaps we should not be asserting too much if we said
in Europe.   The author says:

" It is not within his meaning to publish *a treatise* on diseases
of the eye, but rather to exhibit them as they occur in nature, in
a series of drawings, with such explanations as shall identify them
with symptoms, and with the general treatment of the case."

Before we enter upon an examination of the merits of this
great work, it may not be uninstructive to our readers to lay
before them a brief outline of the history of the class of litera-
ture to which it belongs.   The impossibility of conveying by
language, however forcible, or descriptions however graphic,
the appearances produced by disease have rendered patholo-
gical illustrations necessary; and hence the many splendid
works, both general and special, upon that subject, aided by
all the research of modern investigators, and every improve-
ment afforded by art, which have appeared during the present
century.   While the outlines of anatomical structure and form

generally were painted and engraved by some of the great mas-
ters of these arts upwards of a hundred years ago, the subject of
the eye did not escape investigation ; and the *Descriptio Anato-
mica Oculi Humani Iconibus illustrata* of Zinn, of Gottingen, re-
mains to the present day a monument of the knowledge, truth-
fulness, and skill of those engaged in bringing out that standard
work. At that period, however (1755), engraving had reached
great perfection, and artists of considerable merit were employed
upon anatomical works. Nothing surpassed Zinn's plates, till
the elder Sœmmerring produced his splendid work, *Icones
Oculi Humani*, at Frankfort, in 1804 ; and this was, we believe,
the first book in which coloured illustrations of the eye were
given. Engraving minute subjects, some from drawings made
with the assistance of the microscope, like those expressed in
Sœmmerring's book, is a tedious and consequently expensive
undertaking ; but in course of time the discovery of lithography
enabled publishers and artists to produce illustrations of anato-
mical and pathological works by a much shorter and less ex-
pensive process ; therefore our attention is next directed to
Arnold's *Icones Organorum Sensuum*, brought out in 1839,
which, besides possessing great softness of execution, also affords
the results of the microscopic investigations of that day ; but in
many respects it is inferior to its great prototype. Many other
minor works might be referred to, but these are the three great
standard authorities during the last hundred years.

Up to the beginning of the present century literally nothing
had been done to illustrate the diseases of the eye, as those who
look at the rude representations given in the works of the elder
Wenzel can assure themselves. The first attempt at improving
this branch of knowledge, and rendering art subservient to sci-
ence, would appear to have been made by Antonio Scarpa, in
the second plate to whose large quarto work we have as faithful
a delineation of a few eye diseases as it was possible to convey
by an uncoloured engraving. To James Wardrop, of Edin-
burgh, we are indebted for the first, and for many a year the best
coloured engravings illustrative of ophthalmic pathology(*a*).
The first volume of his *Essays on the morbid Anatomy of the
Human Eye* appeared in 1808, and the second volume, exhibit-
ing some improvement in art, came out ten years later. There
is, however, a want of distinctness about them which renders
them incapable of comparison with more modern productions.

In 1813 appeared the first, and four years later the second vo-

(*a*) Why has the School of Edinburgh produced so little on ophthal-
mology since the days of Wardrop ?

lume of Joseph Beer's great work, *Lehre von Augenkrankheiten.*
The coloured engravings attached to this book were decidedly
the best illustrations of the pathology of the human eye which
had then appeared; and as far as they exhibit the marked cha-
racteristics of certain diseases, and assist our differential diag-
nosis, they have not been surpassed until now. To illustrate this
position, we might point to the drawings of pustular ophthal-
mia, pannus, and dislocated lens, &c. They had also the advan-
tage of having been drawn by the great German oculist's own
hand, and " worked off" under his immediate eye. They are,
however, defective in being too much reduced, and also from
being, in several instances,—in the endeavour to work out the
views of their author,—too defined, particularly in the vascu-
lar arrangement and colour, consequently, not true to nature.
Several followers of the Viennese professor, and pupils who had
studied at his clinique, subsequently produced monographs as
well as systematic works, and some of these were illustrated;
in particular, we may specify the handbook of Heinrich Weller,
of Dresden, which was printed at Berlin in 1819. But many
of the plates are evidently copies from Beer, and do not possess
anything like the force of the originals.

The English works of Ware and Gibson did not contain
coloured illustrations; but in 1811, and as a second edition,
in 1816, Dr. Farre produced and edited the posthumous
work of the distinguished John Cunningham Saunders, *A
Treatise on some practical Points relating to the Diseases of
the Eye*, to which are attached several coloured engravings,
which, though not very valuable as works of art, are evi-
dently true copies of disease. A few years later, in 1820,
appeared Mr. Travers' *Synopsis of Diseases of the Eye*, also
with coloured illustrations, a shade better than those in the
work of the former author. Several of them were drawn by
the same artist; but others, and the most graphic, were from the
pencil of a medical artist, " a gentleman whose accurate know-
ledge of anatomy adds," says the author, "greatly to the value
of his elegant talent for delineation." In 1814 appeared Sir
William Adams' *Practical Observations on Ectropion and Arti-
ficial Pupil*, &c.; but the drawings in that work did not much
advance our knowledge of the subject, nor elevate our art.
Somewhat in the same category, at least as far as the style of
illustration is concerned, may be classed the illustrations at-
tached to Mr. Vetchs' *Practical Treatise on the Diseases of the
Eye*, which appeared in 1820.

We must now pass to the Continent again. Heretofore Ger-
many, Italy, and England, alone contributed to the illustration

of ophthalmic pathology. At this period, however, the French school seems to have been aroused from its apathy or indifference towards this branch of medical science, and Demours produced his celebrated *Traite des Maladies des Yeux*, embellished with fifty-one coloured plates, illustrative of the different diseases of the eye, which appeared in 1818. Honoured be the French Government, ever foremost to advance science and art; this, the first systematic treatise upon the pathology of the eye, which gave a complete set of engravings, came out under the special patronage of Louis XIV., and was paid for by the State. These beautifully coloured engravings far surpassed those of Beer as works of art; and indeed, in the delicacy of handling, softness of touch, and general approach to nature, many of them came down unchallenged to the present time. No pains or expense was spared upon them, and they possess the very great advantage of not being over-crowded on the page. This work of Demour's stands alone in French medical literature.

Mr. Guthrie's *Treatise on the operative Surgery of the Eye* (1823), and then the observations on the *Ophthalmia, accompanying the secondary Form of Lues Venerea* (1824), by Mr. Hewson of this city, appear next in the chronological order of illustrated ophthalmic writings. The coloured prints attached to those productions were by the same artist, but with the exception of a single figure in the latter, they did not come up to the illustrations in any of the English works referred to, and were far inferior to that of Demours. Indeed, there are some figures in Mr. Guthrie's books which may possibly have been drawn from, but could scarcely have been coloured from nature.

In 1836 the Societe Medico-Pratique of Paris awarded Dr. Von Ammon, of Dresden, their prize medal for the best essay upon iritis. His dissertation on the subject, which was published two years later, was illustrated with two coloured plates, giving eighteen enlarged views of the iris in various states of the disease or its consequences. The drawing of these may be correct, but certainly the colouring is anything but natural. The great facilities, however, which Dr. Ammon enjoyed for studying and procuring illustrations of the diseases of the eye, arising out of his official capacity as physician to the Ophthalmic Hospital and the Blind Institution of Dresden, enabled him to prosecute his researches with effect; and accordingly, in 1838, appeared the first volume of his large folio work, *Klinische Darstellungen der Krankheiten und Bildungsfehler des Menschlichen Auges*, which was completed in 1841. When we inform our readers that that great work contains fifty-two

folio copper-plates, with 965 engravings of the diseases or na-
tional or congenital peculiarities of the human eye, nearly all of
which are coloured, they may form some idea of the magnitude
and extent of the work. Although it is very much more ex-
tensive, and in many respects the drawing and colouring
possess more force than the work of Demours, still in several
points of artistic power it is inferior to its French forerunner.
Overcrowding the page (sometimes there are as many as
twenty-six figures on one plate), and in some instances, unna-
tural colouring, are its chief defects; but as it was a private
speculation, cheapness was obliged to be taken into account.
In it as well as in that of Demours, there is no fair representa-
tion of the iris given, therefore no matter how well or how forci-
bly the particular morbid appearance was portrayed, the eye
did not, as a whole, seem true to nature; it wanted life and
expression.

It would not suit the subject in hand to enumerate the
various monographs and systems upon the eye which have ap-
peared during the last ten or fifteen years, both in Great Bri-
tain and on the Continent; nor could we find space to describe
their illustrations, discuss their respective merits, or enumerate
their defects. We may, however, specify four, all illustrated
in the same way, and two of which are well known to Eng-
lish readers; those of Tyrrell and Morgan in London, and
Sichel in Paris, because they appeared near the same time,
and are illustrated in the same manner by coloured lithographs.
Those attached to Mr. Tyrrell's book are decidedly the nearest
to nature, but are very poor and meagre specimens of art either
in colouring or drawing; while those of Mr. Morgan's work we
look upon rather as diagrams illustrating the various forms of
disease, which a man might draw from the description he read
in a book, than any attempt to produce a similitude of nature;
and the French illustrations, both in size, drawing, and colour-
ing, are quite beyond our comprehension, and, consequently,
all criticism upon them would be superfluous. The fourth and
last work is Mr. Wharton Jones' " *Manual of Ophthalmic Me-*
dicine and Surgery:" the salmon-coloured steel engravings in
which, being only " partly from nature, partly copied with
such alterations as he [the author] considered necessary to ren-
der them *more correct* and illustrative," are very well in their
way, and may assist the student or grinder, but afford no in-
formation to the practical surgeon, although both may find
some difficulty in recognising " Sclerotic Staphyloma" in
fig. 2, plate III. of that book.

We have entered into this history of ophthalmic illustra-

tion, its merits and defects, for two reasons:—first, to point out how much a good book of the kind was required, and, secondly, to contrast that now under review with the foregoing works, and to show how far it has avoided the errors we have endeavoured to point out.

We do not introduce Mr. Dalrymple as a young aspirant after fame; he has already attained the highest position in his profession, both as a well educated surgeon and an operator; but, above all, he is a man of general scientific acquirements, literary research, artistic taste, and great practical experience. His work upon the anatomy of the eye is one of the very best that the student can consult, and his various essays and papers upon the diseases of the eye, published in the periodicals during the last ten or dozen years, stamp him as a man of no mean powers of observation. For many years past he has been surgeon to the London Ophthalmic Hospital, the most extensive field for investigation in England. During his connexion with that institution he procured a vast collection of drawings of morbid eyes, and his colleague, the late Mr. John Scott, having bequeathed to him his valuable collection, he has commenced the " Pathology of the Human Eye," the first fasciculus of which work has just appeared, consisting of three lithographic plates, drawn by Mr. Bagg, printed with great care by Hullmandel, and coloured by hand under the superintendence of the author, himself an artist. To each plate is attached some letter-press descriptive of the figures, and giving a short, succinct account of the diseases which they are intended to illustrate, together with some general remarks upon treatment, &c. This portion of the work is not intended as a system of ophthalmic medicine, but merely illustrative of the drawings; of which each plate contains six.

For accuracy of drawing and effect of colouring, as well as general truthfulness to nature, nothing of the kind has yet appeared equal to them. Having thus far expressed our honest opinion of their merits, we may be allowed to make one or two remarks, not for the purpose of qualifying the opinion we have expressed, but as suggestive to the artists employed on this great work. We think some of the figures, particularly in Plate III., rather feeble; they want force both of drawing and colouring. We also think the " light" in the eyes rather too marked and spear-shaped; indeed, for our own part, we do not think it would be any deficiency to omit this artistic touch altogether.

Upon another occasion, when the work is more advanced, and when we shall have an opportunity of discussing the

written opinions of the author as well as the graphic illustrations of the artists, we shall again refer to it; in the mean time we recommend it to the attention of the profession, and cannot but express to Mr. Churchill our meed of approbation for the splendid manner in which the book is " brought out." We only wish it could be made a little cheaper; but if men do not choose to study the diseases of the eye when students, we suppose they ought to pay for the next best mode of acquiring a knowledge of them when practitioners.

A Treatise on the Pathology, Diagnosis, and Treatment of Neu-
  roma. By Robert W. Smith, M. D. T. C. D., M. R. I. A.
  Fifteen folio plates; pp. 30.   Dublin, Hodges and Smith.

If we compare the advantages which have accrued to medicine, or, indeed, to any science of observation, from systematic works, no matter how learned they may be, with those which belong to monographs, we must admit that to the latter class the greatest value is to be attached; for we may safely say that every monograph from the pen of an experienced observer is a distinct addition to our previous knowledge, and a defined step in advance.   The number and quality of such works issuing from any school of medicine may be taken as a fair test of its character and success.   It is, therefore, with great satisfaction that we notice the magnificent book now before us, which in its aim and execution may fairly claim to be the first in the class of Irish medical monographs.   The great opportunities which the author has long enjoyed, and his character as an accurate and unprejudiced observer, would in themselves draw attention to this book, which supplies a want long felt, of a comprehensive work, from an original observer, on the singular disease of neuroma, an affection but little known to practical men, and often overlooked or misunderstood even by experienced surgeons.   The annals of medicine, even from an early period, furnish us with isolated observations of this disease; and we have to thank Dr. Smith for the bibliographical record of contributions to the history of neuroma, now for the first time furnished, which gives references to about eighty observers, most of whose names are of admitted authority. Of these essays but few can claim the title of distinct and comprehensive monographs.   The essay by Mr. Wood, published in the Medico-Chirurgical Transactions of Edinburgh; and the thesis of Alexander Knoblauch, *De Neuromate et Gangliis Accessoriis Veris,* published at Frankfort in 1843;

that of Aronssohn, *Observations sur les Tumeurs dévelopées
dans les Nerfs,* printed in Strasburgh, in 1832; and of Alex-
ander, *De Tumoribus Nervorum,* printed at Leyden, in 1810;
may be taken as the principal works on this disease. Iso-
lated cases and descriptions of the malady, introduced into
general books on pathology, constitute nearly the whole of the
remaining literature on the subject.

We have placed the memoir of Mr. Wood first on the list,
as it is the only monograph on the subject in our language,
and is distinguished by sound views and an absence of any
speculative tendency. Most of Mr. Wood's cases are ex-
tracted from preceding authors; but he has added some ex-
cellent original observations. The thesis of Knoblauch, though
exhibiting the research so characteristic of German medical
literature, adds but little to our previous knowledge, with the
exception of an important case communicated to him by
Chelius, and another observation of the disease by Bischoff.
To this author we shall return, with reference to the opinion
strenuously combated by Dr. Smith,—that we may consider
one of the forms of this disease as nothing but the develop-
ment or original formation of true accessory ganglia.

Let us take a general view of this extraordinary disease, to
which we can find nothing analogous in pathology. Under
conditions, the nature of which is as yet completely hidden from
us, tumours varying from the size of millet seed to that of a
man's head, which, though differing in form, have still a cer-
tain generic resemblance, are produced in the nerves, engaging
both the cerebro-spinal and sympathetic systems, and in some
cases becoming developed in vast numbers, while in others but
a single tumour exists in the entire body. They may be accom-
panied by the most dreadful suffering, or exist even in great
numbers without ever causing neuralgic pain, the patient
being either unaware of their existence, at least from any pain-
ful sensation, or only experiencing the annoyance consequent
on their bulk, or pressure on surrounding parts; and it appears
that the greater the number of tumours the less is the liability
to suffering. Seated within the sheath of the nerve, and en-
veloped by a capsule which appears to be the external neuri-
lemma, they neither, according to our author, present the marks
of inflammatory origin, nor any characters of heterologous
deposit. Once formed they may increase in size, but they
neither suppurate nor contract any intimate adhesions with sur-
rounding parts. The neighbouring lymphatics are not conta-
minated by them; and the state of the general system may be

perfectly healthy, having no analogy to the cancerous or tuber-
culous cachexia.

But the catalogue of singularities does not end here; for it
is found not only that they may exist in many hundreds, pro-
bably thousands, in the same individual, and yet produce no
pain, but that they do not even cause paralysis of motion or
sensation.

The ordinary seat of the disease is in the nerves, after they
leave the cranial or spinal foramina. But in one instance, as in
that communicated by Bischoff to Knoblauch, tumours were
found within the cranium, at the origins of most of the cerebral
nerves; and Dr. Smith has recorded a unique case of neuroma
of the Casserian ganglion, in which severe neuralgia of the
branches of the fifth pair, but especially the inferior and supe-
rior maxillary nerves, was produced.

We have as yet but little information as to the effect of the
development of neuroma in the ganglionic system.   The cer-
vical, thoracic, and semilunar ganglia, the solar plexus, and
other parts of the sympathetic system, have been found deeply
engaged in the disease; but we do not find that any peculiar
symptoms of visceral disease occurred in these cases.   Schiff-
ner has found this condition in connexion with cretinism,
but that it is a common one in idiotcy we have reason to
doubt.   In the case by Bischoff, the patient, a lunatic, died of
gangrene of the lung with pleuritis; and in the example re-
corded by Dr. Smith, there is nothing special in the mode of
death that could lead us to distinguish it from that in other
instances where no such disease of the nerves existed.   It is to
be regretted that the author, after his detailed account of the
pathological condition of all the great nerves in this case, does
not also give that of the thoracic and abdominal viscera with
the same minuteness.   Dr. Smith's researches, however, leave
us to infer, that no special pathologic state of the viscera is
produced in these cases.

But what is the nature of this singular disease?   Micro-
scopic examinations only reveal a fine fibro-cellular struc-
ture, having no character in common with any form of carci-
noma with which we are acquainted.   The author gives two
finely executed representations of this areolar structure (see
Plate XV. figs. 11 and 12), and states that, after the most
minute examination, he has failed to discover any character of
cancer, or any trace of nervous matter in the tumour.   While
we fully agree with the author as to the distinctive character
of this disease, we cannot help observing, that the progress of

microscopical anatomy may throw additional light on the mat-
ter. Remakius, in giving the examination of a tumour removed
by Dieffenbach, observes:

" Neurilema commune telam cellulosam et pauca tantum vasa
demonstrabat. In sequentibus stratis rete vasculosum amplificaba-
tur, juxta fibras cellulosas proprium quoddam fibrarum genus et
prope ad schirrum solidum corpora quoque rotunda granulata, sub-
stantiæ cerebri cinereæ omnino simillima, et corpora pellucida cau-
data, corporibus embryonis nervorum similia, inveniebantur"(*a*).

The singularity of this affection has naturally led to various
speculations as to its nature. Is it a malignant disease analo-
gous to cancer, but specially affecting the nerves? Are these
tumours examples of hypertrophy of the nervous cords them-
selves; or are we to agree with Knoblauch, that where they exist
in great numbers they may be considered as true accessory
ganglia? With respect to the first of these doctrines, we have
already alluded to the author's opinion. We shall now give in
full his observations on the differential diagnosis:

" The malignant tumours are occasionally found involving the
trunks of the nerves, but the true neuroma is, I believe, a disease of
a benign character. Bayle, Cayol, and other eminent pathologists,
have stated that it is identical with scirrhus; but the following con-
siderations induce me to agree with those who maintain the oppo-
site opinion:—

" 1. To whatever size the tumour may attain, or however long
it may have existed, we do not find that it affects the surrounding
tissues otherwise than by its pressure; it never converts them into
a texture similar to itself; the form alone of the nervous trunk with
which it is connected is altered, its component fibres being separated
from each other and flattened: it contracts no intimate adhesion
either to the contiguous textures or to the integuments, which can
be freely moved even over the largest tumours; nor does it affect
the lymphatic glands, either in the vicinity or at a distance.

" 2. It does not exert that specific and destructive influence
upon the constitution which forms so remarkable and so constant a
feature in the history of cancer; it is true that the general health
of the patient is frequently impaired, but this is to be ascribed in
such cases to the continued suffering which he endures, and not to
any specific reaction upon his system.

" 3. The disease does not recur after the removal of the tumour,
either in the part originally affected or elsewhere. Whether the
tumour (when of spontaneous origin) has been extirpated, or the
operation of amputation performed, the patient has been in every
instance permanently relieved from suffering. How different is this

(*a*) Romberg, *Lehrbuch d. Nervenkrankheiten*, 1. Berlin, 1840.

result from the melancholy consequences of operations undertaken for the cure of malignant disease.

"The case recorded by Liston does not tend to establish the malignant nature of neuroma; it was an instance of medullary tumour in the popliteal space, involving the posterior tibial nerve; but, as remarked by Knoblauch, 'has formationes heterologas neuromatum nomine appellari nolimus, quum nihil cum istis commune habeant et imprimis quoad medendi rationis successum tantopere ab iis differant. Dentur his nomina ipsis propria, ut etiam Strukius casum a se observatum fungum medullarem nervi mediani nominat.'

"4. The character of the pain which accompanies neuroma is totally different from that which distinguishes cancer.

"5. The structure of neuroma, as revealed by the microscope, presents none of the characters which are supposed by modern pathologists to be diagnostic of malignant disease."

The author does not claim originality for all these diagnostics, some of which have been given by preceding observers. It is important, however, that he should be able to corroborate the opinions of Knoblauch, who has laid stress on the non-contamination of surrounding parts, and the fact of the disease not returning after operation, as proofs of its benign character. Yet while we admit that the author's views, in addition to those of Knoblauch, go far to establish the non-malignity of neuroma, we must not forget that the comparison of internal and external cancers exhibits some remarkable differences, and, therefore, that in contrasting neuroma and carcinoma we must, with respect to the latter disease, take all its forms into consideration, and not limit our view to external cancer. Thus neuroma is often a painless disease; but so is visceral cancer, as when the disease occurs in the liver, the lung, or mesentery. Neuroma exhibits no tendency to ulcerative or suppurative action, and this is not uncommon in hepatic and even pulmonary cancers. Again, the diseased mass forms no intimate adhesions to surrounding parts; but how often do we see carcinoma of the lung or abdominal viscera covered by a perfectly transparent and non-adherent serous membrane? And with respect to the preservation of the general health, at least until the last stages of the case, this too may be observed in cancer. For we have seen patients die of some ordinary acute disease, up to the invasion of which their health had been excellent, and yet on dissection important organs were found filled with cancerous matter.

To us it appears that the great argument (exclusive of microscopical evidence) against the cancerous hypothesis in neuroma, is the fact of the disease being confined to a single structure; the want of proof of any infection of the blood; and

the success which attends operation in cases of single neuro-
matous tumours.

To a superficial observer the doctrine that the disease con-
sists in an irregular hypertrophy of the nerves would seem
specious, and be further strengthened by inspection of the
Plates attached to the work before us. In most of them we see
not only tumours of various sizes connected with the nerves, but
also that the nerves themselves appear continuously enlarged,
and this, in some instances, to an extraordinary degree. Thus,
in the second Plate, we see a tumour of the sciatic nerve ten
inches in its transverse, and eleven in its vertical diameter;
while the nerve itself, a short space above the tumour, is more
than an inch in width.

The careful dissections of the author, however, have estab-
lished beyond a doubt, that the tumour protrudes from among
the apparently enlarged nervous cords; and that these in their
turn, as well as the nerve above and below the tumour, owe
their great volume not to real hypertrophy, but to the disten-
tion of the sheaths of the fibrillæ by a substance of the same
nature as that which constitutes the mass of the well-defined
tumour.

We have already alluded to the opinion of Knoblauch, that
in the cases where numerous tumours of nerves exist, they
may be considered as examples of an original vice of confor-
mation, in fact as true accessory ganglia. The author meets
this view by the detail of two cases, which, whether we
consider the extraordinary extent of disease exhibited, or the
minute and accurate examination to which the systems of nerves
were submitted, may be safely held to be without parallel in
the history of medicine. And if anything was wanting to com-
plete the value of these contributions, it will be found in the
splendid illustrations, in life size, from the pencil of Mr. Con-
nolly. Both these cases occurred in the hospitals of the House
of Industry, and in both the subjects were adult males. Though
differing in some particulars, they present a singular similarity.
We must refer to the work for these extraordinary cases, to
the anatomical description of which the author has dedicated
not less than five of the large folio pages of his book. All the
nerves of the extremities, together with the pneumogastric,
phrenic, and intercostal nerves, were engaged. Upon the first
of these cases Dr. Smith observes:

" In this remarkable case the total number of tumours existing
upon the nerves, which were removed from the body, exceeded 800;
they presented a striking uniformity, both in their external charac-

ters and in their internal structure; their form was oval or oblong ; their colour a yellowish white; they were solid, and each surrounded by a capsule, which was continuous with the neurilemma; their surface was smooth; their long axis corresponded with the direction of the nerve upon which they existed, and they were only moveable from side to side. Their section exhibited an exceedingly dense, close texture, of a whitish colour, and somewhat glistening aspect, presenting a uniform degree of solidity, and remarkable for a total absence of vascularity. Examined by the aid of the microscope, they were found to be composed essentially of a fibro-cellular structure, the fibrous tissue predominating in by far the greater number, the areolar preponderating in a few ; the fibres were arranged in bands or loops, amongst which permanent oval or elongated nuclei became apparent on the addition of acetic acid. In no one instance out of the numerous specimens examined was there any trace discovered of nerve-tubes, nor any indication whatever of the presence of any of the structures considered by modern pathologists as characteristic of malignant disease."

The second case was even still more remarkable. Upwards of 1400 tumours were removed along with the nerves; and the author declares that there would be no exaggeration in stating the aggregate to be at least 2000. There was nothing abnormal observed in the nervous centres.

The following case is important, as being conclusive against the doctrine of original formation of these tumours. It was communicated to the author by Dr. Henry Kennedy.

" A gentleman, about forty-five years of age, of active habits and vigorous constitution, consulted the late Mr. Colles, sixteen years ago, respecting several small tumours which had formed upon his legs and arms; they were not painful nor the source of any inconvenience. Mr. Colles, although he confessed that he knew not their cause, and was equally ignorant of any mode of treatment by which they could be removed, except by operation, informed him that they were not of a serious nature, or likely to produce any impairment of his general health. He merely recommended a course of tonic medicines, and a strict attention to diet.

" From that period to the present time the tumours have gradually increased in number, but have not become much larger than they were when the attention of the patient was first attracted to them; the only one which increased to any considerable extent was one which he endeavoured to reduce by pressure: it ceased to grow as soon as he abandoned the attempt. At the time of the formation of each tumour he experiences a remarkable feeling of general irritability, as well as a peculiar sensation in the part, somewhat resembling a rheumatic pain; but he cannot always, from mere sensation, refer this trivial uneasiness to the exact situation of the tumour;

indeed the latter is generally formed before his attention is attracted to the part. Their number at present amounts to about sixty ; they are principally situated upon the inside of the limbs, are solid, moveable from side to side, and not in the slightest degree painful ; they appear at very uncertain intervals, and none of them have ever diminished in size.

" The patient himself is of opinion that the primary cause of their formation is indigestion, as he always suffers from derangement of the stomach and bowels, and great acidity, for some time previous to the development of each tumour ; he also finds that exposure to wet, very warm clothing, or sitting long near a hot fire, have a ten- dency to induce their formation. No medical treatment has ever appeared to exert any influence over them; some are as small as duck-shot, others are one inch in length and half an inch in breadth; they are principally of an oval form, their long axis being parallel with the nervous trunks.

" If the cases just described be compared with those which I have extracted from the memoir of Knoblauch, it will be scarcely possible to avoid arriving at the conclusion that they must all be considered as belonging to the same class, and that in all the nature of the tumours was identical. I have already alluded to the opinion entertained by this author, that such tumours are not the results of a morbid process, but of an original vice of conformation,—that they are, in fact, true accessory ganglia. The three cases, however, which I have detailed, are in opposition to this opinion, for here the suc- cessive development of the tumours could be traced, and the periods of their origin in several instances assigned, while in none of them could any trace of nervous structure be detected. These circum- stances appear to me sufficient " pour faire écarter l'analogie, séduisante au premier abord, mais en réalité trompeuse, qu'on a été tenté d'etablir entre ces renflements morbides et les véritables gan- glions nerveux normaux."—p. 19.

The detailed account of the symptoms of neuroma, with original researches on the disease when affecting the ganglionic system ; an important section on traumatic neuroma ; and the author's views as to the surgical treatment of the malady, con- stitute the remainder of the work. Dr. Smith has chosen for his motto the words of Cruveilhier, " l'Anatomie pathologique des nerfs est encore a faire ;" but this book may well justify us in the opinion, that a continuance of the author's researches will soon place the pathological anatomy of the nerves on a level with that of the remaining structures of the body.

We cannot conclude without expressing our satisfaction at the manner in which this splendid work, which must mark an era in Irish medical literature, has been brought out ; and we would especially notice the beauty and accuracy of the Plates, from the masterly pencil of Mr. Connolly. We are not ac-

quainted with any other series of anatomical drawings which combine at once so much of truthfulness, boldness, delicacy of handling, and artistic feeling.

Practical Remarks on the Use of the Speculum in the Treatment of Diseases of Females. By THOMAS R. MITCHELL, M. D., F. R. C. S. I., &c. Dublin, Fannin and Co. 1849. 8vo. pp. 83.

DR. MITCHELL commences his essay with the following sentence, and in the opinion it contains we entirely concur:

" I look upon the introduction of the speculum into general practice as one of the greatest improvements in the treatment of disease since the discovery of the stethoscope; and although some may feel inclined to give the palm to the uterine sound as the more valuable instrument, I confess that I am not of that opinion."

Since the introduction of the vaginal speculum into modern practice, many comprehensive treatises have been written upon its varied uses, and the numerous diseases in the diagnosis of which it renders corroborative or indispensable aid. The work before us, however, does not pretend to so wide a range, as the author modestly informs us that his object is " merely to give, in as concise a form as possible, a few practical directions, illustrating the treatment, with cases." In doing this he does not pursue any definite order or arrangement, but seems to notice the different subjects treated of as they occurred in his clinical lectures, from the notes of which this little volume is compiled. His observations do not extend to any of the malignant diseases of the generative organs, but are confined to those lesions which are of more common occurrence, and which daily present themselves to the attention of the obstetric practitioner.

After noticing most of the forms of the speculum usually employed at the present day, he states:

" The instruments that I am in the habit of using are Ricord's four-valved specula, made of German silver highly polished, with running bolts to keep them distended when introduced."

" Many practitioners disapprove of glass specula in consequence of their fragility. I have, however, used a strong glass one for several years without apprehension."—p. 14.

Considerable experience has led us to prefer " Ferguson's Speculum" to all others, for ordinary purposes; as it is not only portable and easy of introduction, but gives a much clearer

and more distinct view of the parts than any other yet invented. This last peculiar advantage results from its exterior being coated with looking-glass amalgam, so that its internal surface possesses a high degree of reflective power; outside of all is a coating of caoutchouc.

Dr. Mitchell expresses his decided opinion, that it is " by no means uncommon" to find inflammatory or ulcerative disease of the womb in *unmarried* females; and he gives a case in illustration. He further remarks:

" I have stated that the virgin uterus is occasionally the seat of disease; and care should be taken to ascertain the existence or absence of the hymen; as I do not think a practitioner would be warranted in employing the speculum if the hymen exist. In the few cases in which I have used it, that membrane was absent, a circumstance I have very frequently found accompanying disease of long continuance."—p. 19.

Our experience certainly may not be so extensive as Dr. Mitchell's; but we must confess that, with one or two exceptions, we have never seen a case where the symptoms justified the employment of the speculum in a chaste unmarried female; and in connexion with this we would direct the reader's attention to the significant fact above quoted, of Dr. Mitchell's not having found the hymen in those cases where he used the instrument. It is our firm persuasion that a recourse to the speculum in virgins is never warrantable except in cases of extreme urgency, or where there is unequivocal evidence of the existence of uterine disease requiring ocular inspection, or the direct application of remedial agents; and under these circumstances the presence of the hymen should scarcely deter us from making the examination. We feel and speak strongly upon this point, as we fear that the claims of female delicacy may be disregarded by inexperienced advocates of the speculum; and it has more than once fallen to our lot to see young single females, of unblemished character, in whom psoas abscess and spinal disease had been mistaken and treated for inflammation of the cervix uteri, in consequence of which there was induced (to say the least of it) a highly nervous and irritable state of the whole system, that very much favoured the development and hastened the progress of the real malady. We have long thought that the cause of medical science and medical ethics would be much benefited by a monograph from some competent observer, on the " abuses of the speculum."

With reference to the frequency of retroversion of the womb, and the use of the uterine sound,—subjects intimately

associated with the name of Professor Simpson, of Edinburgh,
—our author thus writes:

" Although my experience on the subject has been pretty ex-
tensive, having used the sound in a great number of cases lately, I
have not been able to detect one where the uterus was retroverted;
although I could with facility retrovert it with the instrument."—
p. 25.

The solution of gun-cotton, now so much employed by sur-
geons for varnishing raw surfaces, has proved in Dr. Mitchell's
hands a valuable adjunct to our list of remedies for treating
ulceration of the os uteri, and one which he claims the merit
of having first introduced to the notice of the profession.

Upon the subject of uterine leucorrhœa, Dr. Mitchell puts
forward some rather novel views. For many reasons which
we need not quote, he thinks that there are two species of the
disease; one in which it is situated in the cervix, and the other
in the fundus and body of the uterus. Proceeding on the
statement of M. Chassaignac, that the secretion in the fundus
uteri is acid whilst that of the cervix is alkaline, he passes into
the cervical canal a catheter having a free extremity, armed
with a stilette to which is attached a piece of litmus paper,
and then protrudes the test paper to permit of its being moist-
ened by the discharge; and when time has been allowed for
this it is retracted into the catheter, and the whole instrument
withdrawn. According as the paper is reddened or not, he infers
the disease to be situated in the fundus or cervix. At a later
page he observes, " that in many cases in which I used the litmus
as a test, it had returned unchanged, proving that the discharge
was natural."—p. 58. Such a result (which, be it remarked,
is admitted to occur in many cases) would clearly render the
above hazardous procedure worse than useless; and even sup-
posing the differential diagnosis to be established, what prac-
tical advantage is thereby gained? To this question let our
author reply:

" It will be observed that I have spoken chiefly of the disease
when the cervix uteri has been affected, but I have found a similar
treatment of great value in those cases where the fundus was decid-
edly its seat."—p. 54.

Now we would ask any candid man, is it not trifling with
the health and confidence of a patient to thrust such an instru-
ment as that above described into the uterine cavity, on the
chance of obtaining an indication which, after all, exercises
little or no influence upon the great question of treatment?

In common with Dr. Evory Kennedy(a), Dr. Bennett, and others, Dr. Mitchell regards ulceration of the os uteri as a not unfrequent cause of abortion and sterility; but maintains that when it coexists with pregnancy it appears subsequently and not prior to conception.

In conclusion, we must compliment the publishers of Dr. Mitchell's treatise on the manner in which the binding and typography of the volume are executed. We wish it were in our power to say as much for the accompanying illustrations; but, whether through fault of the artist or engraver, they certainly cannot be regarded as specimens of the present state of this department of printing in colours.

A short Sketch of the Life and Writings of the late Joseph Clarke, Esq., M. D., Vice-President of the Royal Irish Academy, and formerly Master of the Dublin Lying-in Hospital, &c. &c., containing minute Results of his private Practice, extending over a Series of forty-four Years, including 3878 *Births.* By ROBERT COLLINS, M. D., President of the King and Queen's College of Physicians in Ireland, formerly Master of the Dublin Lying-in Hospital, &c., &c. London, Longmans. 1849. 8vo. pp. 88.

IT was our intention, in following up our Biographical Memoirs, to have presented our readers with a portrait, and a sketch of the life and writings of the distinguished Irish physician, Joseph Clarke; but Dr. Collins having, with much better effect, taken upon him that task, it remains for us but to give an analysis of the work before us, and to quote from it such extracts as will furnish our friends with the usual information given in our Biographies.

This work may be divided into three parts: A brief autobiography; an account of the latter years of Dr. Clarke, together with several letters from his correspondents; and a most interesting and valuable account of his private practice " during the lengthened period of forty-four years, including the unexampled number of *three thousand eight hundred and seventy-eight births*," the results of which, as regards both mothers and children, are detailed. " This I look upon," says the author, " as indeed a

(a) See his paper entitled " Practical Observations on some congestive, inflammatory, and ulcerative Affections of the Uterus," in the third volume of this Journal. Though Dr. Mitchell nowhere alludes to this valuable monograph, still we think that, coming from such a source, it could hardly have escaped his notice.

record of the utmost value to the profession, presenting them, as it does, with a description of information nowhere hitherto promulgated, and well deserving of their serious attention."

Joseph Clarke was born in 1758, in the county of Londonderry, and has left the following account of his early life:

" I was a second son, and very early in life showed a great disposition towards school learning. At the age of twelve, I was put to a Latin grammar school, being then a good English scholar, clerk, and arithmetician. I remained nearly five years with a curate (Kearns), who had been educated in Trinity College, Dublin, and was always reckoned one of the best scholars of my standing. After reading Euclid's Elements, my grand-uncle, by the mother's side, Dr. Maconchy, of Dublin, recommended Glasgow College to me for the study of Logic, Mathematics, Latin and French, each of which I prosecuted with industry and sensible improvement, in the winter of 1775 and 1776. Thus prepared, I went to Edinburgh for the three ensuing years, where I studied medicine with a regularity and zeal exceeded by none. In September, 1779, I graduated with great ease to myself and some reputation. Soon after my return to Ireland, I visited my friends in Dublin, where I received a pressing invitation to remain some time in Dr. Maconchy's house. Having spent about three months in this city, much to my satisfaction and advantage, I determined to leave it, with the intention of settling as a physician in Derry. A friend being in pursuit of recommendatory letters to forward me in this object, heard of a companion being wanted to accompany Mr. N. L. Rowley's second son to the Continent, whither he was going for the improvement of his health. Having been fortunate enough to obtain this appointment, I set out on the 3rd of March, 1780, for Lausanne, in Switzerland, where we spent the summer months very pleasantly, while Mr. R.'s health was tolerably good. In October, however, such a change had taken place, as made it necessary for us to return to London, where I availed myself of the opportunity thus afforded me of attending Dr. William Hunter's spring course of lectures, which included those on the gravid uterus, and from which I derived several useful hints and practical cautions. In May, 1781, Mr. Rowley died, upon which I returned to Dublin. During my absence, my respectable and worthy grand-uncle, Dr. Maconchy, died; his successor and my uncle, George Maconchy, Esq., kindly offered me accommodation in his house; and many friends advised me to think of settling in Dublin, in the accoucheur line, by which branch of the profession Dr. Maconchy had realized a good fortune. Among my advisers on this occasion, the most strenuous was Dr. George Cleghorn, one of the oldest and most intimate of Dr. Maconchy's friends. From him I then, and often after, received very sound and useful lessons. No man knew Dublin better, and few could so readily direct a professional man as to the manner by which its inhabitants were to be pleased. When I decided on attempting a settlement in Dublin, my property was in-

considerable. From my father I was entitled to between £400 and
£500. Most of this had been spent on education. A balance of £160
was the residue of my patrimony. To this I may add £100, pre-
sented by the Rowley family on my return, with many compliments
and professions of friendship. Of my allowance while abroad, I had
not saved more than £20. On the 11th of July, 1781, I entered a
pupil, in the Lying-in Hospital, and on the 28th of March, 1783,
was appointed Assistant to the Master (Dr. Rock), for both of which
I paid him 100 guineas, so that my cash was now very low. In June,
1783, through the mediation of my friend, Counsellor John Dunn,
I received and accepted a proposal to go abroad with John Jacob,
Esq., of the county Tipperary. His health was bad, and his mother
wished him to see a little of the Continent. My companion being in
love with a Miss Gahan, to whom he was afterwards married, con-
trived to shorten his intended absence. We returned, in August,
1784, to Ireland, and, after visiting Killarney, and spending some
weeks in Munster, I resumed my station of Assistant in the Lying-
in Hospital, on the 14th of September following. By this excursion
I acquired much valuable information, from visiting the London
and Continental Hospitals, gratified a great deal of curiosity, dimi-
nished somewhat my youth (which is adverse to professional pro-
gress), and saved of my allowance £240. Once more, then, I felt
myself independent. On the 11th of April, 1785, I was admitted
Licentiate of Physic in the College of Physicians, for which I paid
£30 5s. 5d. On the 7th of April, 1786, I married Isabella Cleghorn,
niece to Dr. George Cleghorn, with whom I got a fortune of £1500;
and on the 3rd of November following, was elected to the Master-
ship of the Lying-in Hospital.

"Such are the most material circumstances of my history that I
can at present recollect; they are thrown together in haste, yet they
may, at some future period, serve to gratify the curiosity of some
near relation, or assist my own recollection of past events. The re-
gistry of my practice will, in future, afford the best continuation of
this sketch."

Dr. Collins next gives some account of the Cleghorns, who
were in succession Anatomical Professors to the University; but
as we intend to devote a separate memoir to these distinguished
physicians, a large portion of whose unpublished writings is
now in our possession, we pass over this part of the work, and
continue our quotations from Dr. Collins's memoir of his dis-
tinguished relative:

"At the very commencement of Dr. Clarke's professional pur-
suits in Dublin, he was called upon by Professor Cleghorn to as-
sist him in the Anatomical School in Trinity College, to the interests
of which he felt himself most ardently attached. Dr. Cleghorn had
at this time retired from private practice, and resided chiefly on his
estate in the county of Meath, about sixteen miles from town. Every

letter to Dr. Clarke, however, contained the most anxious inquiries about College affairs. In one, dated Kilcartey, December 18, 1787, he writes to Dr. Clarke:—' I shall always acknowledge my obligation to you, for the ready and willing assistance you gave me in carrying on the lectures for those three years past.' "

" Dr. Clarke having, by the excellent method of conveying instruction, acquired considerable character, ceased to lecture in Trinity College in the year 1788. His last division of his profits, in July of this year, was £60 7s. 7d. He had been elected Master of the Lying-in Hospital in November, 1786, and his facility as a lecturer in this department of his profession has been stated, by those who had the benefit of attending him, to have excited great admiration."

The philanthropic labours of Dr. Clarke, in procuring a better system of ventilation in the hospital, by which an immense amount of suffering and mortality was prevented, are already well known to our readers(a); so we pass on to another benefit which he conferred on this country, one especially connected with the Dublin school of medicine :

" On Dr. Clarke's succeeding to the mastership of this noble charity, a new era was established, one worthy of grateful remembrance, from the incalculable benefits this institution, through his instrumentality, has been made ever since to confer upon his professional brethren and the public, by the creation within its walls of a school of instruction, unequalled in any similar institution in the world. No previous master had adopted this truly wise measure of lecturing in the hospital, and thus extending far and wide the unlimited good this institution was calculated to afford as a school of practical midwifery. Even at this early period Dr. Clarke had acquired considerable reputation in this capacity; and I am fully authorized, by several professional friends who had the advantage of attending him, to state that he was universally admitted to be one of the most lucid and agreeable lecturers they had ever heard, and that he possessed, in an eminent degree, the happy facility of making his class clearly comprehend that which he wished to convey. On the establishment of this admirable school, he at the same time caused a registry to be opened, in which were recorded each pupil's name and address on entrance; and if, at the expiration of the term of his attendance, after a careful examination held by the master and his assistants, he was found to have acquired that information which, from the extensive opportunities he enjoyed, he should have done, he was given a certificate to this effect, signed by the master, assistants, and registrar of the hospital, the date of which was also entered."

" His income from practice rapidly increased, until it reached £3000 yearly, from which amount for many years it varied but

(a) See the Transactions of the Royal Irish Academy, vol. iii.

little. By accumulation, &c., his receipts, within the first twenty years, approached £5000 annually, and this solely by his own exertions.

"In the early period of his life he was a tall, slightly made man, and the fatigue of so laborious a profession was occasionally too great for his bodily strength; so much so, that at times when returning to his home at night, after considerable exertion, he has told me, if he walked a short distance he was obliged to rest himself on the way from pure exhaustion. On one of these occasions of debility he sent for Dr. Harvey (a well known physician in Dublin), to advise what he should do, and, after detailing to him his inability for so much work, &c., &c., Dr. Harvey asked him abruptly, ' What do you eat for dinner?' and ' what do you take after it?' ' Indeed,' replied the Dr. (whose appetite was but indifferent), ' I sometimes take a little mutton broth, with a little boiled mutton, and at other times chicken. I take very little wine, or occasionally a little drop of spirits in water.' Dr. Harvey replied, ' Phew—nonsense, man ; take your roast mutton and roast beef, with a pint of good port wine daily, and you will be as stout a man as any in the kingdom.' ' I took his advice,' said the Doctor; ' I speedily improved, and enjoyed excellent health afterwards.' He certainly did not take so much as Dr. Harvey's allowance of wine, but he took it much more freely than he had previously done. He was always a man of temperate habits ; he took, I should say, as nearly as possible, half a pint of wine daily ; this, from my own knowledge, I can state to have been his habit for the last twenty-five years of his life, during which I dined in his company almost daily, and for seventeen years of which I enjoyed the utmost happiness under his roof. His practice was almost entirely confined to the upper ranks of society, and, consequently, he got large fees, as may be inferred from the statement that, in fees varying from £10 up to £150, he received £37,252.

"In his Fee Book, November 11, 1801, where £1 (note) is entered, he adds, ' First of these vile productions.' The old gold guinea, of the value of £1 2s. 9d., Irish currency, was the usual fee previously, so that the innovation was far from agreeable to physicians."

The opportunities for advancing medical science afforded by his appointment to the Lying-in Hospital were not lost on Dr. Clarke, as evidenced in a number of essays on various subjects published by him, and also a very valuable condensed abstract of the hospital while under his care, giving in detail all the remarkable occurrences met with during the treatment of every patient admitted, amounting to 10,387 cases. This was the first report of the institution ever published, and paved the way for that more enlarged and highly instructive one subsequently given us by Dr. Collins, the author of this memoir.

To the practical physician and accoucheur, however, the

great value of the volume now under consideration consists in its furnishing a minute detail of all the occurrences of interest observed in Dr. Clarke's private practice, extending over a period of nearly forty-four years, during which time he attended 3847 cases, and that too with an amount of success rarely, if ever, met with. The deaths from all causes were but twenty-two in number, being in the proportion of 1 in 175 deliveries:

" And when we examine into the cause of death in the twenty-two cases recorded, we find that there were three from peritonitis, five from phthisis, one from hectic fever, one from scarlatina, one from a paralytic stroke, one from diarrhœa, one from dysentery, and one from anomalous disease; thus leaving eight deaths as the results of child-birth, or in the proportion of one in 477."

This is indeed worthy of attention, and should make us anxious to discover how he was enabled to conduct so vast a number of cases to so happy a termination. He evidently was no admirer of the forceps (having used it but once, and that ineffectually), possibly from the abuse of this instrument, as well as the lever, which he found to prevail when he came into practice in this city; still he had *not a single instance of death resulting from laborious or protracted labour.*

The various complications are given under distinct headings, and will be found well deserving a careful perusal; affording the means of comparing the statistics of private practice with those of hospital, and thus furnishing materials from which may be deduced many interesting conclusions. The appearance of this volume at the present time seems opportune, as it may serve, in some measure, to repress the onward movement in favour of artificial interference in obstetric practice, which would seem to be the characteristic of the present day.

The correspondence on various subjects with different distinguished practitioners in London and Edinburgh will be found particularly interesting; especially the letter of Dr. Sims, which gives a detailed account of the labour and lamented death of her Royal Highness the Princess Charlotte, being the only authenticated account of that catastrophe published. Dr. George Cleghorn's letter, at page 23, should be read, and the advice it gives treasured, by every man in the profession, young and old.

The work concludes with a history of the last illness and death of Dr. Clarke, which occurred in Edinburgh, in 1834, where he had gone to read a paper before the British Association.

The voluminous extracts we have made show the estimation in which we hold this little work, which is written in a simple and unostentatious style, but evincing in every page the

deep admiration of the author for his revered relative, to whose memory it is dedicated. It is very well printed, and we only wish Dr. Collins had presented his readers with an engraving of Dr. Clarke, which could have been done at a comparatively small expense, and would have added much to the interest of the book. In the board-room of the Lying-in Hospital there is a very good portrait of Dr. Clarke, by Cregan; and also in the same institution a posthumous bust, by a lady, which we know to be an excellent likeness: either of these would have answered the purpose.

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Thus far have we expressed our opinion honestly, and we trust consistently, of Dr. Collins as an author, and of the work which he has just produced. We have now to address him in another capacity, that of an Irishman and President of our College of Physicians, and also as one of the Council of the Royal Dublin Society, an institution established for the advancement of agriculture, arts, and manufactures, *in Ireland.*

The book, which we have now reviewed, bears the London imprint; our esteemed friends, the *long* house of Longmans, have had the honour of its birth, and the gas-lights of Paternoster-row first dawned upon its entrance into life. Thus it would appear from the title-page, but on turning to a little black line on the back of the title we find that it *was printed in Dublin, and sent to London to be published!* Surely the memoir of the distinguished Joseph Clarke, penned by the present President of the King and Queen's College of Physicians in Ireland, a gentleman so highly esteemed in this city, and so favourably known to every practical physician in Great Britain, did not require the stamp of the London market to make it saleable!

Do we then advocate exclusive dealing? By no means; a man has a right to sell his book, as he does his merchandize, in the dearest market. In the present pressure of affairs we might, perhaps, ask an author to be patriotic enough to offer his produce first to a merchant in the country from which he derived his income, and if that merchant or that bookseller would not give the same liberal price which could be got elsewhere, we think that he had done all that could be required of him. If, however, an author prints a book at his own expense, we think he is bound to give the £15 or £16 which it may cost to the distressed and unemployed printers in the country in which he resides. But has not this been the case, it may be asked, in the work before us? It is true it has, but in practical effect it were nearly as well that it was not so, for by *publishing* the book in London, and affixing to it the

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name of a publisher not residing in this country,—a book too printed, bound, and the paper of which was made here, thus in every respect manufactured in Dublin,—it deprives the Dublin printer of the benefit of the name and extension of his manufacture. Just as well might the Belfast linen merchant stamp his cloth with an English mark. If we are not capable of supporting a national literature in Ireland, neither should we be allowed a national College of Physicians. Does it increase the prestige of the Dublin school of medicine, or even uphold its reputation, to send its literature to another country for publication? Practitioners may rest assured of this, that in proportion to the fame and influence of their school will be their own receipts.

Now, in making these remarks, we do not mean the slightest disrespect to our esteemed friend Dr. Collins, whose philanthropy is unquestionable, and who has ever upheld the honour and dignity of the medical profession in this country; but we have chosen this opportunity for laying before the profession in Ireland our opinion on this subject, as well as the state of the publishing trade at present in this kingdom. Neither can we be accused of allowing our nationality to get the better of our judgment, or in any way to bias the tone and spirit of our review of English printed works; in confirmation of which we might refer to several highly laudatory notices of the printing and illustration of English works, which have appeared in almost every number of this Journal. Our attention is, however particularly called to the subject from the state of the Dublin printing trade during the past two years. There are now in this city nearly 400 working printers, about 60 of whom are at present totally unemployed; and during the last two years from 100 to 150 were generally out of work. Our printers subscribe to a fund for the relief of their unemployed brethren, and so great was the destitution among the trade lately, that this tax amounted to a much larger sum, in proportion to their receipts, than that paid in England on incomes over £150 a year; and several of our printers were obliged to emigrate at the expense of the body during the past year.

We have just been handed a work entitled, " What's to be done for Ireland?" *printed* and published in London, by an Irish " late Assistant Poor Law Commissioner." We know an Irish bishop too—formerly a Fellow of our University—who prints his Charges to his Irish clergy at his own expense in London. What a pity such persons cannot derive their income from the people they employ. We have a " Dublin Review," forsooth, which is altogether printed, published, bound, and mostly

written in England. We are not sure, however, whether it advocates Irish manufactures; practically it condemns them.

The printing and book trade has been a flourishing manufacture in Ireland for a very long period. Where is there a better contemporaneous edition of Shakspeare, as far as correctness and accuracy in the text, or in printing, paper, and " getting up," than that of Thomas Ewing, brought out here in 1771. Indeed " Ewing's Editions" of works printed at that period are justly celebrated for their accuracy and the excellence of their typography. We might also refer to several works— the folio " Pillar" edition of the " Universal History," for example—printed in Dublin by George Faulkner in 1744, to establish the same position. And in the present day, are the Transactions of the Royal Irish Academy, the works of the Irish Archæological and Celtic Societies, the Annals of the Four Masters, Petrie's Round Towers, Dr. Kennedy Bailie's Greek Inscriptions, Wakeman's Antiquities, the works of Dean Graves, the Census, or the work of Dr. Smith on Neuroma, which has just appeared, inferior to any printing of a similar class in Europe?

In the foregoing observations we must not be misunderstood. We are contending for a principle, not merely specifying a particular work. There are other works we shall have to deal with ere long, to which these remarks apply even more than to that just considered. It appears to be the fashion now to send over medical works to England, not merely for publication but for printing also. Do our Irish authors fancy that by printing and publishing their books elsewhere they are thereby conciliating or bespeaking the favour of the London reviewers? If they do they very much mistake the character of these gentlemen.

It is true there might have been a time, when the compact of the " Row" was all powerful, before West End booksellers broke up that joint stock company, and before we had Irish periodicals to defend our literature,—when men were afraid of having their books tried by their merits, without the passport of the London mark; but surely the day is past when an author need fear to cross the Stygian ferry of criticism without a cockney obolus in his mouth.

Report of the Medical Officers of the Dublin Metropolitan Police,
   for the Year 1848, *with Returns in connexion therewith.* Dub-
   lin, Thom.   1849.   Folio, pp. 15.

SINCE the establishment of our city police force the medical
officers attached to that body, Dr. Ireland and Sir A. Clarke,
have published annually a report of their experience of the
diseases to which the men are liable. Of these valuable records
the present is the eleventh, and, as presenting a tolerably accu-
rate statistical return of the effects of a peculiar employment
on the health of a number of individuals, is of equal importance
with those which preceded it. We speak of the Report as being
only *tolerably* accurate, for our professional brethren in Dublin
well know the unwillingness on the part of policemen, when ill,
to apply to their own medical officers for advice.   This arises
from the very reprehensible system that exists of immediately
reducing the pay of any of the men who may be reported sick,
thus punishing the unhappy individual for a visitation of Pro-
vidence.   Hence they invariably apply in the first instance to
some private practitioner, or try to struggle through their ill-
ness as long as they can at all do so.   Thus, in a note to one
of the deaths on record, it is stated :—

   " This man had been quacking himself for some days before the
doctors saw him, and when visited by them was in a very bad state
with quinsy."

   As regards the venereal disease, especially, no reliance can
be placed on the return, for the harshness of the rule by which
the men, when reported to be thus affected, are discharged
from the service, forces them to conceal their illness.   Thus it
will be found that out of the entire body, consisting of upwards
of 1100 men, but ten are reported to have had the venereal
disease in 1848, and but one in 1847.   We fear, however,
that no words of our's will have any influence in causing this
heartless and cruel system to be altered, when we find its ad-
vantages put before the inhabitants of our city in the following
extract from the Report before us, in words savouring more of
the political economist than of the humane physician:

   " The medical officers have annexed to this Report a return exhi-
biting the sick in a financial point of view, from which it will be
found that, so far from the medical department, salaries and cost of
medicine included, being any expense to the public, it is a fact that,
after deducting the sum incurred in the support of it from the
amount of stoppages made from the pay of the sick, a balance re-
mains available *for other purposes* of the police establishment."

Thus, if a vigilant policeman, during the most severe weather, instead of skulking under an archway, exposes himself during five or six hours of the night to the rain and storm, in order to protect the lives and properties of the citizens, and thereby contracts an inflammation on his lungs, he is punished for it by the loss of his pay. Monstrous! This must be reformed. If policemen malinger, let them be dismissed; but let not the well conducted be made to suffer. Why is there not an hospital for the Metropolitan Police?

We may be told that the same system of stoppage of pay, in case of sickness, is the rule in the military service. But how stands the case? The foot soldier receives a shilling a day. Out of this, after paying for his living and all other incidental expenses, he has about two pence to spend. Should he get an attack of sickness, he is immediately provided with every hospital accommodation, nourishment,—even the most costly,—and attendance, for which he is charged ten pence a day, not in addition to, but instead of the regulated charge for his diet, &c., when in health. Thus, he has still his two pence as before, so that he actually does not lose a single farthing of his pay. But the unfortunate policeman, often burdened with a wife and children, is mulcted in a shilling a day, without receiving any equivalent in the way of diet, lodging, or other medical appliances, except medical attendance and medicines, unless, indeed, he be charitably admitted into some of our public hospitals. We again repeat, the system *must* be altered: is a metropolitan policeman inferior to a soldier?

There are some other points in this Report which relate more immediately to medical science, and one or two of which we notice in all good feeling, chiefly with the view of their correction for the future. The nosological arrangement adopted is altogether in defiance of the modern improvements in medicine, and exhibits a curious jumble of diseases. We would suggest to the compilers of the Report the use of that of the Registrar·General of Births, Deaths, and Marriages in England. Many questions are touched upon by the medical officers, which have little or no connexion with the subject, and which might lead those who were unacquainted with these gentlemen to imagine that they were introduced merely with the view of amplifying their subject. Thus we have a lengthened disquisition on the political state of Ireland last year, coupled with a laudation of the powers that be (all proper, it must be supposed, in a Government document); and an official announcement that the contagion of cholera is a disputed question, the dispute being attended with much good, but not requiring any opinion from the medical officers of the Dublin metropolitan police.

PART III.

REPORTS, RETROSPECTS, AND SCIENTIFIC INTELLIGENCE.

MEDICAL MISCELLANY.

Postscript to Mr. Moore's *Paper on the Coagulability of Human Milk.*

Since the passage at page 286 of the present Number of this Journal was printed, in which I suggested that the great coagulability of the colostrum might be a provision intended to compensate for the weak coagulating power of the stomach of the newly-born infant, I have met with a paper published by Dr. John Davy, on the colostrum of the cow(a), in which he remarks, that "its easy coagulation may suit it to the stomach, in which, probably, the gastric juice at first is in small quantity and feeble." Dr. Davy did not find the colostrum of woman to coagulate when heated, but he states that the trials he made of it were few. As I have already mentioned, I found some specimens to solidify on the application of heat, like white of egg, while others became converted into curds and whey ; but as this property often continues but for a very short time, in order to succeed with the experiment the colostrum should be taken as soon as possible after lactation commences. Had Dr. Davy experimented on a greater number of specimens, he would, I am sure, have obtained the same results as I have done, and have included human colostrum in the explanation I have just quoted from him.

Being anxious to ascertain the duration of this coagulable state of the colostrum, I applied to Dr. Edward L. Ormerod, whose residence in the Dublin Lying-in Hospital gave him peculiar opportunities of deciding the question. Dr. Ormerod was good enough, with the kind permission of the Master of the Hospital, Dr. Shekleton, to undertake a series of observations on the subject, with the results of which he has furnished me. In the first case examined, where lactation commenced thirty-eight hours after delivery, in eight and a half hours

(a) Medico-Chirurgical Transactions, vol. x., London, 1845, p. 90.

after the commencement of lactation the colostrum continued to solidify on the application of heat, and at the end of thirty-two hours a few coagula were formed when heat was applied. In the second case lactation commenced seventeen hours after delivery, and the milk continued capable of solidification by heat for nineteen and a half hours. In the third case lactation did not commence until ninety-two hours after delivery, and the milk tested twelve hours subsequently was not coagulable by heat. In the fourth, lactation began at the time of delivery, and in thirty-two hours after heat rendered the milk half solid. In the fifth a free secretion of milk took place twenty-three hours after the birth of the child; the milk was solidified by heat at the end of twelve, and still curdled at the end of fifteen hours. In the next case the flow of milk took place at delivery; at the end of twenty-eight hours it solidified; at the end of thirty-one hours it remained fluid when heated. The seventh patient examined had milk three days before delivery; thirty hours after delivery it curdled when heated; at the end of thirty-five hours it remained fluid. In the eighth case the milk, which commenced to flow in six hours after the birth of the child, was scarcely curdled twenty-eight hours subsequently. In the ninth the milk was scarcely coagulated eleven hours after the commencement of lactation, which took place twenty-two hours after the birth of the child. In the tenth case lactation commenced fifty-four hours after delivery, the milk examined half an hour afterwards solidified by heat; three hours after it scarcely curdled.

From the foregoing observations I think it is most probable that the first milk secreted after parturition by the human female is always capable of solidification by heat; in those cases in which this effect was not produced, the milk was not examined until a longer period had elapsed after the flow commenced than that during which this property continued in the tenth case. So far as the present observations go, the duration of the state of coagulability does not appear always to depend either on the amount of the secretion nor on the period at which lactation commences. Dr. Ormerod informs me that in determining the latter the patient's report cannot be generally relied on. Some will say lactation has not commenced, while on examination the breasts will be found full of milk; and others will state the contrary when scarcely a tea-spoonful can be obtained.

This extreme coagulability of the colostrum evidently depends on the presence of albumen. Scherer supposes that the peculiar distinguishing character of casein (that of not being coagulated by heat alone) may be developed by a gradual more intimate and chemical union of the albumen with alkali(*a*). Perhaps the principle which is to form the albumen of the blood in the infant's system exists in the first milk in a state requiring less assimilation than that in which it occurs in the subsequent secretion. Berzelius

(*a*) *Wagner's Handwörterbuch*, vol. ii. p. 472.

describes the casein of the colostrum of the cow, ass, and goat, as consisting of two substances, the one coagulable by heat, the peculiar casein of the colostrum—"colostrum casein"—the other (called by Chevallier and Henry "mucous matter") incoagulable by heat, ordinary casein(*a*).

With a view to determine the mode in which the coagulation of milk is effected by rennet, Berzelius performed the following experiment. He washed the mucous membrane of a calf's stomach very well in cold water, and dried it. He then placed a portion of the dried membrane in 1800 times its weight of skimmed milk, and gradually raised the temperature to 50° C. (122° F.), and kept it at this point until the coagulation was complete. This took place so perfectly, that only a mere trace of casein could be detected in the filtered whey. The membrane was then taken out, washed, dried, and weighed: it had lost but six per cent. of its weight(*b*). Berzelius remarks that even if the amount lost had entirely combined with the casein, the coagulation of the latter could not be explained by the addition of so insignificant a quantity, 30,000 times its own weight of milk having been coagulated by the portion dissolved.

In this experiment the coagulation must have been effected by the membrane acting as a ferment, and determining, with the assistance of the temperature employed, the conversion of a portion of sugar of milk into lactic acid, which, neutralizing the alkali of the milk, would cause the precipitation of the casein(*c*). On this subject Scherer remarks as follows: "That a portion of the sugar of milk is changed in the stomach of the child into lactic acid is very probable ; that this change ensues, however, with all the sugar, we cannot admit, since the soda of the bile would in no case be sufficient for the neutralization of so large a quantity of acid: but a neutralization must take place, for an acid chyle cannot exist in the normal condition. The supposition of a complete change is inadmissible also, because it is well known that when once the coagulation of the casein has taken place, or, if we choose, when once a free acid is present, the conversion of sugar of milk into lactic acid will cease"(*d*).

The last-mentioned fact may be considered as a provision of nature to prevent the sugar being converted into a substance which would not only be less nutritious, but would even be absolutely injurious to the infant economy. The development of sufficient lactic acid to neutralize the free alkali of the milk probably takes place with great rapidity ; and if free acetic acid exists in the gastric juice of the infant, as it does in that of the adult, the coagulation of the milk will be quickly accomplished.

Speaking of the effect of menstruation on the milk of nurses, Scherer remarks that it is sometimes injurious to the child, although frequently, as he has himself observed, no such injurious effect is

(*a*) *Thierchemie*, p. 709.   (*b*) *Thierchemie*, p. 680.
(*c*) Carpenter's Physiology, third edition, p. 668.   (*d*) *Op. cit.* p. 475.

produced, nor can any change be discovered in the properties of the milk. L'Heritier, he says, relates two cases in which children, previously quite healthy, were attacked with anasarca in consequence of using such milk, and he believed that this might be attributed to the greater serosity of the milk. Such milk, he continues, is also said frequently to render children pale and debilitated, and often to give rise to violent colic pains. D'Outrepont, who quotes a similar case, found the milk during menstruation to resemble the colostrum(*a*).

Since the note to page 291 was printed, I have been informed by Mr. Sullivan, whose able Retrospect of the Progress of Chemistry appeared in the February Number of this Journal, that the casein of human milk has lately been subjected to analysis by Rochleder and another German chemist, and that the only difference discovered between it and the casein of cow's milk is some trifling variation in the quantities of the inorganic matters combined with it; the difference, in fact, appears to consist rather in the arrangement of the ultimate component particles than in any change of their relative proportions. This is, perhaps, what might be expected, for it is not likely that one variety of casein should differ more in its composition from another than it does from fibrine or albumen, and the ultimate composition of these three substances is, it is well known, nearly identical.

From insufficient observance of the context, I gave in the note to page 280 an incorrect version of the quotation made by Berzelius, of a statement of Simon's. It should have been rendered thus: " Its compounds with acids" (i. e. the compounds of human casein) " are in much greater number soluble in water" (than those of the casein of cow's milk). This is one of the conclusions I have drawn from my experiments.

It has been stated that skimmed human milk is incapable of spontaneous coagulation; a portion from which I carefully removed the cream in two successive layers, had, however, at the end of six days, formed a considerable coagulum.

Dr. G. O. Rees draws an interesting and instructive comparison between the composition of the milk and that of blood. Dr. Rees looks upon the casein of human milk as being incapable of forming insoluble combinations with the mineral acids(*b*).

In comparing ass's milk, in respect to the small quantity of cream it contains, with the filtered milk recommended by M. Donnè, it must be borne in mind that the former, probably in consequence of the large proportion of sugar of milk and extractive matters present in it, will often prove slightly laxative; and that, if administered to children while labouring under diarrhœa, it will increase the affection. Sir Henry Marsh informs me that this laxative property is

(*a*) *Wagner's Handwörterbuch*, vol. ii. p. 471.
(*b*) Cyclopedia of Anatomy and Physiology, vol. iii. *Art.* " Milk." London, 1847.

removed by heating the milk to about 212°.   The mode in which he directs this to be done is, to keep the vessel containing the milk standing in boiling water until the desired temperature has been attained.   Sir Henry likewise informs me that he has found ass's milk treated in this manner, with the previous addition of a small proportion of lime water, to form a most useful article of diet for children, even when affected with diarrhœa.

While these pages were passing through the press an opportunity was afforded me of examining a specimen of sheep's milk.   In twenty hours after being drawn it was slightly acid, specific gravity 1·034; it was thick; had a rich, agreeable taste, similar to that of the cream of cow's milk; on standing it threw up a thick and abundant cream; in coagulability it resembled the milk of the cow and goat, forming a dense, firm coagulum when boiled with a very minute portion of nitric, hydrochloric, or acetic acid; a large excess of the latter redissolved the coagulum. Coagulation was also instantly produced by the addition of these acids when applied without heat.

I have already alluded to the kind assistance I have received from Dr. Sibthorpe.   I am happy to have, in conclusion, an opportunity of thanking Dr. Ormerod for contributing his investigation of the coagulability of the colostrum.   I regret that I was only able to give an abstract of the table he drew up for me, which contained in addition to what I have quoted, particulars as to the state of the patients, the amount of the secretion of milk, &c. To Mr. Sullivan, also, I am deeply indebted for free access to his valuable library of standard German chemical works.

A Case of complete Paralysis of the Motores Oculorum, caused by a Tumour within one of the Cruca Cerebri.   By S. Browne, Surgeon to the Belfast Ophthalmic Institution.

On the 26th April, 1848, James Townley, aged three years, was brought to the Belfast Ophthalmic Institution.   He then presented the following objective symptoms: ptosis of the right superior palpebrum; considerable divergence of the right eye, with the pupil dilated permanently to a quarter of an inch in diameter.   On the left side there was a very slight paralysis of the eye-lid.   No divergence of the globe, and the pupil, though dilated to nearly the same extent as that of the right, was still active under the stimulus of light. The power of vision in both eyes seemed perfect at the distance of eighteen inches or two feet, and beyond, but the right eye could not distinguish minute objects, placed in its axis within ten inches. The child's appearance denoted the complete strumous diathesis, and also the effects of recent sickness; he seemed very delicate, and walked feebly, especially on the *left* leg.   I learned from his mother, an intelligent woman, that he had been sickly from his birth; his dentition had been very protracted, not having cut a tooth until he was twelve months old, and that he had suffered very much during the period from convulsive attacks.   When

about two years old he suffered very frequently from headachs and colicy pains. In the month of August, 1847, he had an attack of fever, which lasted three weeks; after that time he lost his appetite, and frequently exhibited unnatural drowsiness. However he rallied during the winter, and seemed better in general health than he had been before the attack of fever. Somewhere about the beginning of the year 1848, his parents first observed a peculiarity in his eyes, the right being especially remarkable. "It seemed to be half-hidden," as his mother expressed it, "and was apparently more prominent than the other, and showed more of the white of the eye." Early in the month of March he had another attack of synocha, all the family at that time labouring under the same disease. It was after his convalescence from that attack he was first brought to the Eye Dispensary, when he presented the symptoms I have already enumerated. Of course I at once diagnosed some disease of the brain at or near the origin of the third pair of nerves.

At that time he was ordered two and a half grain doses of calomel three times a day, with successive blisters to the nape of the neck, and occasionally on the temples. After he had taken two drachms of the calomel the system first became affected; it was then given in two-grain doses every night for about a month, when it was omitted, repeated blisters having been applied in the mean time. During the period of the treatment just stated, he evidently improved in appearance and strength; there was not then any paralysis of the left side, though, in lifting that leg, he seemed not to have complete control over it, as he moved it forward with a jerking kind of gait.

Though there was this evident amendment in his general health, the eyes did not improve in appearance, on the contrary the ptosis of the right side was nearly complete, the divergence of the eye so great (exhibited when the lid was elevated by the fingers) as to conceal a portion of the cornea behind the external canthus; the pupil was fixed and fully dilated, the iris presenting merely a narrow ring within the margin of the cornea. There was still, so far as could be ascertained, the same amount of vision in that eye as when he was first seen by me. The left eye had also become more affected, both in the paralysis of the upper lid, dilatation of its pupil, and divergence in its axis; there was also an evident diminution in the power of seeing objects. During the summer I occasionally saw the patient, observing little, if any, change in his appearance or symptoms.

For some months previous to the 16th of January, 1849, I had not seen the child, on that day his mother came to inform me that for the five or six weeks previously he had been gradually becoming worse. She stated that his appetite, which had all along been pretty good, had then failed; he began to totter very much in his gait, and to be quite drowsy and listless; his sight was, to use her expression, "very dim, as he stumbled over anything placed in his way." When I visited him next day I found him seated on

his mother's knee, and evidently insensible to external impressions, though a few days before he had spoken some words when addressed, but inarticulately. I observed that there was a constant motion of the tongue and lips, and chronic spasms of the left leg and arm; the right side was not affected in any way, save by an occasional twitching of the muscles of that side of the face; the breathing was hurried and laborious. The ptosis in both upper lids was complete; the pupils extremely dilated, and the right globe immoveably fixed and divergent; the left eye also diverging greatly, and occasionally agitated by a flickering movement of the muscles, at which time there was also an appreciable contractile action of the pupil. He lived for about ninety-six hours after I saw him, when he died in a slight convulsive struggle.

Autopsy.—Twenty-six hours after death I had an opportunity of making a minute examination of the brain and eyes, of which the following is a summary of my notes taken at the time. The head presented a well-developed cranium, the sutures being fully and firmly ossified; on removing the calvarium the dura mater presented a perfectly normal appearance, but upon opening it both surfaces of the arachnoid were dotted with small granular points as if of organized lymph, but very few adhesions were found to exist over the top of the hemispheres. The brain having been removed very carefully, it was observed that in the posterior and inferior portion of the anterior lobes there was the appearance of recent effusion of blood; that from the fissure of Silvius around the chiasma of the optic nerves and forward on the base of and between the anterior lobes there was marked evidence of recent inflammatory action, with congestion, thickening and change of structure in the arachnoid and pia mater; the optic nerve seemed quite healthy in structure, as well as the optic tracts; the third pair of nerves were found much diminished in size, and changed into a soft pulpy structure of greyish matter, interspersed with fine streaks of a reddish hue; the right crus cerebri, at its escape from the pons Varolii, was observed to be more prominent than the left, and felt to the touch as if composed of a hardened mass; on removing a thin layer of the medullary matter, a very firm tumour of the size of a walnut was presented, this was found to have completely destroyed the right crus, save a thin medullary covering, while on its inner side it pressed upon the left crus, causing softening of it and of the posterior border of the corpus callosum; the quantity of fluid within the membranes and ventricles of the brain amounted to eight ounces. The tumour when weighed was found to be two drachms and forty-four grains, and was composed of firm tubercular matter, of homogeneous structure, and without any apparent neuclus. Its surface, however, presented a lobulated appearance.

The eyes, which I removed very carefully, were minutely examined. I observed before removing them that the pupils were dilated as fully as they had been during life; after they had been handled a little in the necessary manipulations while preparing them for dis-

section, I noticed that the pupil of the right eye had contracted considerably while the left remained unchanged. The structure of the left eye was quite healthy, the ciliary nerves being beautifully developed; indeed I have never had such a good opportunity of tracing the union of these nerves in the ciliary ligament, and their minute interlacing branches which supply the iris and ciliary body.

In the right eye I found all the coats and tissues perfectly normal, but it is worthy of remark that the ciliary nerves were not nearly so large as those in the left eye; some of the branches divided from the nasal portion of the ophthalmic division of the fifth. Besides being smaller, they were so soft as to render it impossible to trace them beyond the ciliary ligament. I may add that the retina of each eye was quite healthy, and easily divisible into its component layers.

Remarks.—This case is instructive and interesting in several points of view. It is probable that the disease commenced at a very early age, by a deposit within the right crus cerebri of the small point of tubercular matter, which gradually increased by successive deposits until it attained the large size which it exhibited after death. This tumour was evidently the cause of the several symptoms observed during the progress of the disease, and at last excited the inflammatory action with effusion, which closed the scene. Were such demonstration necessary, this case would fully illustrate the physiology of the third pair of nerves; it also, I think, clearly shows that contraction of the pupils is effected through them, and depends upon their being in a normal condition.

Of course it is clear that no treatment could have cured the disease, but it is probable that that which was adopted may have retarded its progress; and, I may presume, had the symptoms observed depended upon inflammatory action within or around the crura cerebri, it is certain that the treatment pursued was the only one likely to be followed by beneficial results.

Case of congenital Tumour on the Eye-ball. By J. I. Trayer, M. D., Castlewood, Queen's County.

Patrick Kilbride, aged 23, applied to me on the 4th of September, 1848, to have a tumour removed from the ball of the right eye.

On examination I found a yellow, granulated tumour seated on the right eye-ball, of a nearly semi-spherical form, and encroaching on the outer side of the cornea to such a degree that it covered about one-fifth of its area, and though not extending so far as to cover the pupillary opening, still by its prominence it obstructed so many of the oblique rays that the field of vision was materially contracted on that side; and when the patient attempted to look to the right, without turning his head, the right eye was nearly useless. This tumour was of such a consistency that, while it was slightly altered in form by the pressure of the lids, it still had sufficient firmness to protrude between them, and prevent their

being ever completely closed. It bore on its summit several hairs, about as strong as the eye-lashes, which became a source of constant irritation, obliging him to cut them short occasionally. The mass was evidently sub-conjunctival, and appeared to be equally firmly attached to the corneal portion of its site as to that of the sclerotic. It was also the point of convergence of several large vessels, especially one large cluster that came from the outer commissure of the lids.

This tumour was congenital, and the man gravely attributed it to the fact of his mother having been struck while carrying him with a "burr," one of those little, round, bristly beards of the burdoch; and he dreaded much that the popular opinion might be too true which says, "for what is born with you there is no cure." This would be the more distressing, inasmuch as besides the deformity, which was considerable, and gave an unpleasant air to his whole countenance, this tumour, in virtue of its size, prevented a complete closure of the lids; and the hairs with which it continually irritated the conjunctiva, were every now and then the cause of more or less serious inflammations, which continually interfered with his work, and rendered his sight weaker after each attack. To the combination of the above causes I attributed the existence of a central ulcer of the cornea which existed at that very time, and which I endeavoured first to heal before I should attempt the removal, by operation, of its cause. This being attained by appropriate treatment in about three weeks (a time which will not appear long when it is remembered that the source of irritation still existed, and that the patient's living fourteen miles off prevented a very regular attendance on his part), I proceeded, on the 28th of September, to remove the tumour. This I effected by divaricating the lids by means of the spring speculum contrived for the operation for strabismus; then by fixing a tenaculum in the body of the tnmour, and exercising a gentle traction therewith I carefully dissected off the tumour from its attachments to the cornea and the sclerotic, steering, as well as I could, between the two dangers of leaving too much to be removed by the subsequent use of the nitrate of silver (which I proposed to use), and of injuring, by too close cutting, the transparent cornea. The surface exposed by this process bled pretty freely, both from the conjunctival vessels above-mentioned, and from a great number of little vessels whose mouths gaped upon the wounded surface of the sclerotic. After this had completely subsided, I very freely applied the solid nitrate of silver to the whole surface of the wound, taking care not to go beyond this on the corneal side. I ordered a collyrium of borate of soda, and compresses, wet with cold water, to be constantly applied.

I found the tumour to be composed chiefly of fatty matter, but containing bands of a rather dense, fibrous-looking substance, and carrying on its summit about a dozen fine hairs.

On the third day after the operation he returned, beginning already to feel great comfort from the removal of this tumour. A slough had fallen off from the surface of the wound, and diminished

considerably the thickness of the lamina of fatty matter left by the knife. I now again applied the nitrate as before, and ordered similar applications of borax collyrium and cold water dressing.

I twice again, at intervals of a week each time, applied the solid stick of lunar caustic, and had the great gratification of seeing, on the last occasion, an immense improvement in the aspect of the organ. His sight gained daily in strength from the absence of the continual irritation to which he had been subject, and his field of vision had so much increased that he declared his right eye to be now as useful nearly as the other. The distance of this poor boy's abode, and the occupations of a farmer's life, prevented his coming to me again until February, 1849, when he came to show me his eye, and I was pleased to find that there remained scarcely a trace of his former deformity. On looking closely at the eye there is a barely perceptible nebula occupying the position of the ulcer, but so very slight that it does not interfere with his vision, which is now very clear; while on that part of the cornea occupied formerly by a portion of the tumour, it is all completely transparent, with the sole exception of a very delicate crescent-shaped nebula, existing at the extreme margin of the base of the tumour. This is so very slight that I expect it will (with the central nebulous appearance) either in whole or in part yield to a continued use of a collyrium of borate of soda and sulphate of zinc,—one of those unchemical combinations that experience has taught me to value in such cases, notwithstanding the apparent incompatibility of the ingredients.

Case of slow Action of the Heart in Fever. By CHARLES HALPIN, M. D., Cavan.

In reply to the query in the Circular relative to the Fever Report, respecting the peculiar phenomena of the circulating system, Dr. Mease and myself, in our joint report on the epidemic fever of 1847, stated that we had met with "nine cases in which the heart's action ranged between forty and fifty beats in the minute, yet all those cases terminated favourably"(*a*).

Since that report was written I had an opportunity of treating a similar case in the County Fever Hospital: a short history of its course may not be uninteresting.

Ellen G——, aged 18, was admitted to hospital 2nd December, 1848. Pulse 96; skin hot; tongue dry, but clean, with considerable thirst; no headach. The fever ran its course mildly, and terminated, without appreciable crisis, on the eleventh day. On the 14th of December she relapsed; the skin became hot, and the pulse rose to 84. On the 15th it fell to 70, and continued to decline gradually but steadily until the 18th, although stimulants were given very freely. On the 18th the pulse was 42 ; 19th, 45 ; 20th, 46.

(*a*) Dub. Med. Jour., No. xiii., N. S., Feb. 1849, p. 116.

She took seven and a half ounces of whiskey each twenty-four hours. 21st, felt better, but pulse was 44 ; 22nd, 44; 23rd, 40. Ten ounces of spirits were again taken.

Dec. 24th. Pulse 40. Took the same quantity of stimuli; was up and dressed ; and, with the exception of this extremely slow pulse, was apparently well.

Dec. 25th. Pulse 40. On this day she was ordered the acetated tincture of iron, and small doses of tincture of Spanish flies. Continued the spirits; ten ounces daily.

Dec. 26th, pulse 42; 27th, 52. Took six ounces spirits. 28th, 29th, and 30th, 80.

After this date all remedies were laid aside, and she was discharged on the 6th January, the pulse being then 68.

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